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The Oil Man's Calendar

OCT.	
20–22	National Stripper Well Association, Tulsa.
20–22	Independent Petroleum Association of America, Tulsa.
24	Louisiana-Arkansas Division, Mid-Continent Oil & Gas Association, Shreveport.
29–30	American Institute of Mining & Metallurgical Engineers, Petroleum Division, Los Angeles.
31	California Natural Gasoline Association, Los Angeles.
NOV.	
2– 7	American Petroleum Institute, Annual Meeting, San Francisco.
13–14	American Association of Oil Well Drilling Contractors, Annual Meeting, Dallas, Texas.
DEC.	
3	New Mexico Oil & Gas Association, Artesia.
5	Oklahoma Stripper Well Association, Tulsa.

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The Changing Panorama

Plenty of Steel If Properly Rationed

Authority Says Surplus Enough for Normal Business Needs

Startling allegations that there is no serious scarcity of steel, if properly rationed, are made in the current issue of Iron Age, the outstanding authority of the steel industry, in an editorial by J. H. Van Deventer, president and editor. Faced with a threatened reduction of 30 percent in its steel supply the oil industry will be interested in some of the facts disclosed by editor Van Deventer reproduced below:

"Some of our non-defense industries are threatened with steel starvation. And there is no substitute diet for steel as there is for many other materials, like aluminum, nickel, chromium, copper, etc., which are actually scarce in view of defense requirements.

"Such scarcity is not the case with steel. Properly rationed, our steel producing capacity is great enough to satisfy every conceivable demand of defense, including aid to Great Britain, Russia and China, and leave a considerable percentage over. No studies yet made, even the most grandiose, have shown where or how our defense and aid activities as scheduled can possibly use more than 40 percent of our total ingot capacity.

"On the basis of our present ingot capacity of 86 million tons, the remaining 60 percent which should be available to non-defense industries amounts to 51 million tons, or enough to permit these non-defense enterprises to do business practically on their 1939 basis. For during that year, our total ingot production was only 52½ million tons. And that included considerable aid to England and France on the 'cash on the barrelhead' plan.

"Even if we should eventually have to put the non-defense users of steel down to 36 percent usage of present capacity, or 31 million tons, they would be as well off for steel as all our industries were in 1938, when total production was but 31½ million tons. And that would be better than starving them to death.

"Our non-defense industries are going to be our lifeblood after this thing is over. Let's ration them with definite, even though severely curtailed, allocations based on past usage of steel, rather than shoot them to death with priorities."

OPC Conservation . . .

The first order of the Office of Petroleum Coordination dealing with conservation of petroleum as it is produced in the field, issued October 11, indicates an interest in every phase of operation, ranging from economics and steel requirements to ultimate recovery. Apparently control of field operations is to be broad and complete. Although the order deals primarily with condensate and gas-cap fields, it probably is indicative of the extent of regulation that will be applied to all other types of fields.

The order states all drilling and development is to be of such nature as to use minimum quantities of steel and other materials necessary to obtain maximum economic recovery. In this connection it is stated development is to be on the widest practical uniform spacing, and that unitization of individual properties shall be effected to whatever extent may be necessary to render such spacing patterns equitable. This is an important statement.

The order also provides that lean gas or tail gas is not to be removed if this might have a tendency to reduce the ultimate recovery. In addition the order declares the natural energy of the reservoir is to be utilized efficiently, whether it be in the form of compressed natural gas or in the form of a natural water drive. These are important statements, indicating that reservoir pressures are to be controlled as a conservation measure, even if pressure maintenance plants are necessary.

While the industry has been using wider well spacing, unitization of properties, and reservoir pressure control more effectively and frequently in recent years, the general application of such principles enforced by the Office of Petroleum Coordination would bring important operating changes in many instances.

"Rising Prices and Increased Costs"

Setting Record Straight On Suggestion that Crude Rise Due

In a letter concerning last week's article headed "Rising Prices and Increased Costs Point to Crude Raise," a reader has strongly protested mention therein of a 10-cent increase, which he deprecated as "pitiful." He declared that "the extra taxes are going to take that much, to say nothing of a 10 percent increase in wages and more than that for new material; and secondhand casing, tubing, and rods, which are used to a great extent have gone up 40 percent. That's a fact.

"If you don't feel like asking for more than a dime just keep still," the critic demanded. "I would rather be a 'Stripper well martyr' than even try to get along with a measly dime. You know well and good that we should have 50 cents increase, to even match the price we had three years ago, considering the cost of production, of those days, as of today . . . and we still lack 5 cents per barrel getting what we were three years ago."

Unfortunately, this plea for a 50-cent increase, with its concise, if not conclusive, supporting evidence, has come to the wrong place for fulfillment and should have gone instead to the Office of Price Administration at Washington, which is exhaustively investigating the merits of the proposition of higher Mid-Continent postings.

To keep the records straight, it should be stated here that this publication did not "ask for a 10-cent raise," as the reader said in his letter. The discussion was not an editorial but simply an informative article on the prevailing crude prices, which took into consideration recent trends of generally-watched business barometers and presented spot information on the crude markets in all sections of the country.

In the article, the statement was made — and the arithmetic is here confirmed — that Mid-Continent postings would have to be in-

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creased 10 cents a barrel (about 8 percent) above the present prices, which were established around May 20, if the postings were to be kept in line with advances scored meanwhile by commodities in general, as the Department of Labor's price index of 889 commodities at wholesale had risen from 85.0 percent of the 1926 average on May 24 to 91.6 on September 13.

Since the article was written, statistics for September 20 and September 27 have become available, and they show that in the past two statistical weeks there has been a sagging of commodity prices, instead of the further increase that might have been expected. The combined index eased from 91.6 on September 13 to 91.5 on September 20 and to 91.2 on September 27, with farm products, foods, and 28 basic commodities all showing small declines.

It is obvious, of course, that all individual prices must not necessarily conform with the trend of prices in the aggregate; that special circumstances will force some prices away from the general pattern; and that such special conditions may surround crude prices at present, although the curve for crude prices during the past 10 years has been remarkably consistent with the trend of prices in general, as shown on the chart on page 14 last week.

Representatives of the industry currently are ably attempting to show the price control authorities at Washington that crude oil prices require special consideration; that a 25-cent increase in the Mid-Continent would be advisable, from a national-defense standpoint, for the purpose of stimulating declining oil field discoveries; and that such an advance is needed to compensate for increases that have occurred in costs of producing oil.

How Prices Change . . .

Except in extraordinary circumstances, general crude price revisions of more than 10 or 15 cents a barrel have been rare. The last time that Mid-Continent crude was increased 25 cents a barrel in one revision was May 20, 1929, a boom time when the posting for 36-36.9 gravity was raised from $1.20 to $1.45 a barrel.

After sinking to 25 cents a barrel during the depression (in May, 1933), 36-gravity Mid-Continent crude recovered to $1 a barrel within a few months, but through a series of advances of 10 to 19 cents each, which permitted consolidation of gains and maintenance of equilibrium, as the markets felt their way to higher ground.

During the World War, crude price changes under 25 cents were the rule, and it was not until a year after the close of the war that there occurred violent fluctuations in crude prices, and even those were fairly well in line with the abrupt changes in commodity prices in the aggregate.

Oklahoma-Kansas crude was priced at 75 cents a barrel when that war broke out in 1914 and it dropped 10 cents and another 10 cents before the end of the year and eventually to 40 cents in the spring and summer of 1915, after which it rose gradually, by 5- and 10-cent increases, to $1.20 a barrel by the end of 1915. In 1916, the price rose by 5- and 10-cent advances to $1.55 in March, dropped back in 5- to 20-cent stages to 90 cents in late August, and then recovered in 10-cent increases to $1.40 in December, 1916. Even in 1917 the greatest single increase was 20 cents, the Oklahoma-Kansas price having advanced by these steps: from $1.40 to $1.50, $1.60, $1.70, $1.90, and to $2.00 as of August 18, 1917. On March 19, 1918, Oklahoma-Kansas crude was advanced to $2.25 a barrel, and it was kept stabilized at that point during the remainder of the war and for a year afterward, having undergone no change until it was increased 25 cents to $2.50 a barrel on November 20, 1919. Thereafter, four successive increases of 25 cents were made at short intervals until on March 1, 1920, the price was raised to $3.50 a barrel, the highest price ever paid for this grade of oil, more than 3½ times its monthly average price for 1913 and almost 9 times its minimum price in 1915.

The high price of $3.50 reached on March 1, 1920, held until January 24, 1921, when it fell to $3. Thereafter, the price dropped sharply, by 50- and 25-cent cuts, some of them less than a week apart, until on June 15, 1921, it was down to $1 a barrel, postings having changed as follows: January 24, $3; January 31, $2.50; February 4, $2; February 9, $1.75; May 2, $1.50; June 13, $1.25; June 15, $1. The price remained at $1 until October 1, when it rose to $1.25, and then it was advanced to $1.50 on October 7 and to $2 on November 7, 1921. In 1922, the price of Oklahoma-Kansas grade dropped to $1.75 on July 15, to $1.50 on July 18, and to $1.25 on August 2. In 1923 the price trend was steadily downward, and in 1924, 1925, and 1926 there was an improvement to around $1.75, followed by stabilization around $1.25 in 1927, 1928, 1929, and 1930, since which time the best prices have been between $1 and $1.25.

The best price for Oklahoma-Kansas 36-gravity crude since the depression was $1.22, from January 28, 1937, until October 12, 1938, when there was a 20-cent cut to $1.02. The $1.02 price held throughout 1939 and 1940, and then the posting was increased 5 cents to $1.07 on April 1, 1941, and 10 cents more, to $1.17 on May 19, 1941.

Another 10-cent increase would place Oklahoma-Kansas 36-gravity crude, representative of Mid-Continent oils, at $1.27 a barrel, which would be 5 cents above the 1937 price of $1.22; and 25 cents, or 25 percent above the $1.02 price that prevailed in the early part of this year, that is, up to April 1.

Percy Jones . . .

On three pages of last week's OIL WEEKLY appeared three acts in a human drama involving a man very much loved in the oil industry.

On page 55 was an advertisement from the S. M. Jones Company containing a note from a youngster who slightly more than 40 years ago, went to Beaumont and opened the first oil well supply store there. On the page was the reproduction of a letter from the young man, Percy Jones, to his father, "Golden Rule" Jones, of Toledo. And on the page was reproduced a picture of the young Percy Jones standing proudly in front of his store of 40 years ago. On the opposite page was an editorial picture of the dedication ceremonies of the Lucas gusher monument at Beaumont. In the crowd, though you cannot pick him out in the picture, is Percy Jones, participating in the dedication ceremonies — and, although he did not know it, participating in his last meeting of oil men. Because, as is related on page 76 of last week's OIL WEEKLY, Percy Jones died that evening, stricken fatally in his hotel, after two lesser attacks during the day.

We think that Percy Jones passed away as he would have wanted it. And we know that he has left his stamp — that of absolute fairness — on the oil industry, and that up in Toledo there is mourning for a man who did far more than his part in making Toledo a city in which it is pleasant to live.

Washington Roundup

Producers advise coordinator price increase needed if supply is to be met . . . Serious bottleneck seen in lack of refining capacity . . . New England utilities suffer for fuel . . . Moffett continues attacks

By B. F. LINZ, Washington Correspondent

A DARK picture of the country's future oil supply, from producer to consumer, was developed this week as producers told the Office of Price Administration that current prices are a deterrent to discovery, Coordinator Ickes disclosed that a serious bottleneck is developing in refining and a House subcommittee released reports that New England utilities are short of fuel oil.

Supporting his proposal to increase crude prices 25 cents a barrel, Frank Phillips, chairman of the board of Phillips Petroleum Company, told Leon Henderson, administrator of OPA, that costs of production have overtaken price with the result that production has been slowed down in some sections and exploratory work has dropped to a low level. Even the proposed 25-cent increase will not entirely correct the situation, he warned, and further increases will be necessary in the near future if producers are to receive a profit and exploration is to be encouraged.

With demand already at the level of refinery capacity, Ickes disclosed, future increases in demand will necessitate either expansion of productive facilities or nation-wide curtailment of consumption. The refinery situation is just developing and detailed information is not yet available, but if studies show that refining can not keep up with demand it will bring about the most serious phase yet developed in the relation of gasoline to the defense program, he admitted.

At the Capitol, a Merchant Marine Subcommittee learned that New England utilities, hit by drouth, are facing a shortage of fuel oil which bids fair to become increasingly serious as cold weather sets in. The fuel oil situation was the first subject of consideration by the subcommittee, recently set up to study the gasoline, fuel oil and coal supply of the Atlantic Coast.

Also at the Capitol, Senator W. Lee O'Daniel sought to guard against the possibility of the projected Texas-New York crude-oil pipe line being converted to a natural-gas line after the emergency, through legislation he submitted to amend the Cole Pipe Line Act by providing that any pipe line built under that law shall be scrapped and the material sold immediately if ever used for the transportation of natural gas.

Other developments of the week included the making of contracts by the Maritime Commission for 49 more tankers and the initiation of negotiations for the construction of 15 reinforced-concrete oil barges; the granting of priorities for the construction of seven more plants for aviation gasoline or its constituents, and a "recommendation" by the coordinator for conservation of so-called condensate pools.

Mid-Continent Prices

Early action on its proposal to increase crude-oil prices 25 cents a barrel on October 15 on purchases of 25,000,000 barrels annually in Kansas, Oklahoma and Texas, was demanded of Leon Henderson, head of the Office of Price Administration, October 10 by Phillips Petroleum Company, it was disclosed during the week.

The increase was first proposed about July 15, but was deferred for 90 days at Henderson's request, in order that OPA might make an investigation. OPA failed to take action within that period, and on October 7 the company announced it would make the increase effective October 15, but deferred action at the telegraphic request of Henderson, but with a warning that prompt action is necessary if production is to be kept up to demand.

The proposal for an increase, Henderson was told, was "in the best interest of national defense in order to stimulate exploratory work, protect our present reserves and guarantee a continuing supply of crude petroleum."

Evidence of lack of supply is appearing in many sections, it was declared, and higher prices are necessary to cover actual cost of production now, with further increases probably necessary to insure a fair profit to producers.

The telegrams exchanged between Henderson and the company were made public by Frank Phillips, chairman of the board, together with a memorandum submitted in explanation of the proposal to increase prices.

In that memorandum, the company pointed out that the country is approaching a shortage of crude oil because of the decrease in discovery of new reserves "in spite of the fact that we have abundant potential supplies of petroleum which can be made available to meet our unprecedented demand if there is an adequate price."

Current demand for crude oil now is 20 percent larger than in 1937 and 10 percent above 1940 and is steadily rising, while the annual rate of discovery has fallen 60 percent since 1937, it was declared.

"In addition to the increasing demand," it was contended, each barrel is relatively more important because of the present national emergency. Obviously, therefore the discoveries of new reserves should be increasing. It is equally obvious that the large known reserves under wells of settled production should be protected. Instead, these wells are facing aban-

donment because of greatly increased costs and shortages of steel and equipment."

An adequate and assured reserve is the "primary and fundamental" concern, Henderson was told and, because price controls exploratory effort and because price determines the economic life of small wells of settled production, it is the most important single factor affecting the reserve supply.

"We have now reached a stage in the petroleum industry where normally the price of crude petroleum would have advanced and exploratory work would have increased," it was explained. "Under present price restraints, however, we face an election of courses. Low prices may be forced on the industry for a time. This will eventually involve the necessity of abnormally high prices as a result of an actual shortage of supply. If reasonable prices are permitted now with an assurance that there will be proper price adjustments, exploratory work will be encouraged and there will be an assurance of plenty and a reasonable price."

Phillips' memorandum set forth the arguments for an increase in price, as follows:

"(1) The declining rate of discovery must be reversed. The stimulating effect of price on exploration is the only effective and practical means of accomplishing this.

"(2) The cost of finding new reserves has risen threefold since 1937 and is steadily increasing.

"(3) The cost of finding, acquiring and producing crude oil has increased 42 cents a barrel since 1937.

"(4) Rising costs of labor, material and taxes are affecting the entire production situation and are threatening the small wells of settled production with premature abandonment.

"The needed increase in crude oil prices is relatively small when translated into the prices of refined products," it was declared.

Refining

The whole United States may have to be placed on gasoline rations if a shortage of refinery capacity which is now beginning to appear becomes definite, it was disclosed October 16 by Coordinator Ickes.

The coordinator revealed that a "bottleneck" has made its appearance in the oil industry as a result of demand increases beyond refinery capacity, and that his office is giving serious study to the situation, on which it hopes to have definite figures within 30 days.

He made it clear that he considers the possibility of a refinery shortage as the most serious aspect of the whole oil situation, and that if it develops it may have a definite influence upon the economic situation of the entire nation.

Meanwhile, reports reached Washington that certain major companies have notified a number of Texas refiners that deliveries of crude oil to them will be halted November 1. Ickes immediately asked for the names of the companies and refineries involved, declaring that it was necessary that no refineries be permitted to close in view of the situation.

"We are running into a bottleneck in general refining capacity for gasoline," he said. "That is why I would be very glad to have the names of refiners who have been refused crude."

Present refinery capacity is about 4,000,000 barrels a day, but demand already has passed that figure, he indicated. The Army and Navy are calling for "enormously greater quantities of gasoline" and cannot predict with any certainty what their requirements will be in the future, and large quantities of gasoline are going to England, which is taking about 50 percent of her requirements from the Gulf Coast and the rest from Aruba.

For some time, Ickes explained, the refineries of the country, on the average, have been operating well above 90 percent of capacity, leaving little room for expansion of output.

To meet any deficiency which may be shown by material now being gathered it is planned to attempt to secure priorities for material to add new units to existing plants rather than to embark upon a general program of refinery construction. New units can be added, the coordinator said, in the course of a few weeks but as much as two years might be required to construct a whole new plant.

Shortage

Meeting in executive session to initiate its investigation of the East Coast situation, the Hart subcommittee of the House Merchant Marine Committee received a confidential report October 15 from Thomas R. Tate, chief of the Federal Power Commission's national defense staff, which painted a dark picture of a shortage of fuel for New England's public utilities.

Both fuel-oil and coal stocks of the utilities now are below the average for this time of the year, and the situation is getting progressively worse, he told the group.

His report dealt with a broad investigation made by the Power Commission into the situation, details of which were held confidential until the subcommittee passes on its conclusions.

The load on the New England utilities is progressively increasing and stocks of fuel are steadily diminishing, Tate told the subcommittee. The situation may become more aggravated, he pointed out, when freezing weather reduces hydro-electric capacity, already seriously affected by prolonged drouth.

Another effect of the drouth, he added, has been to reduce transportation and force the utilities to rely more heavily upon their stocks of fuel, further draining supplies, and the companies also have been unable to increase their regular contract supplies of fuel oil and coal except at higher prices, which they must pass along to consumers.

Following the hearing, Chairman Edwin J. Hart (D., N. J.) said it was felt by the subcommittee that the government should take steps to bring about a better coordination of transportation facilities so that existing fuel stocks can be enlarged and the increased stocks maintained.

He stated also that the group plan to investigate reports that the fuel oil problem is "more fundamental" than a transportation question and that there is a "paucity of production" in some types of fuel oil.

Supplies of light fuel oil on the East Coast have been definitely improved but there is still a deficiency in overall stock, it was announced October 17 by Coordinator Ickes.

Gasoline inventories last week were 1,132,000 barrels under a year ago, he said, and heavy fuel oil inventories were 2,577,000 barrels under last year. Total inventories of oil and principal products on October 11 were 3,112,000 barrels less than on the corresponding date in 1940, but the 1940 figure, the coordinator said, is "generally regarded" as being insufficient to meet present and future needs, so that the actual deficiency is much greater than the difference between current and 1940 inventory levels.

Reports to the coordinator's office show that the companies have re-

arranged tanker schedules so as to haul more heating oils and less gasoline which, together with the warm weather that has prevailed, has enabled them to build up the heating oil supply.

Stocks of heating oils on October 11 were 19,418,000 barrels, an increase of 1,114,000 barrels over the corresponding date last year, but stocks of crude oil, at 13,497,000 barrels, were 567,000 barrels under a year ago. Stocks of gasoline, 18,387,000 barrels, were down 1,132,000 barrels; stocks of fuel oil, 10,226,000 barrels, were down 2,577,000 barrels.

Priorities

New orders were issued by the Office of Production Management October 16 granting an A-10 priority rating to oil producers — both in discovery and development as well as exploitation of pools — for maintenance and repair equipment. The preference also will be accorded to manufacturers and warehousing and wholesaling.

The rating will be applied only to material for maintenance and repair and will not extend to the improvement or expansion of or additions to present installations.

Aviation Gasoline

Granting of high priority ratings on seven new plants for production of 100-octane aviation gasoline or the base stock and blending agents required for that fuel was announced by Coordinator Ickes October 16.

At the same time, the coordinator said that the need for aviation gasoline may force a reduction of the production of high-test motor fuel, although efforts are being made to treble low-octane production as rapidly as possible.

The granting of the new priorities brings to 15 the number of aviation gasoline plants to be constructed. The program calls for construction of isopentane plants by Union Oil Company at Wilmington, California, and Shell Oil Company at Wilmington, California, and Wood River, Illinois; a hydrocodimer plant by Shell Oil Company at Houston; an isobutane plant by La Gloria Corporation at Corpus Christi; a base stock plant by Gulf Refining Company at Port Arthur, and a 100-octane plant by Phillips Petroleum Company at Borger, Texas.

Priorities previously issued provide for construction of aviation gasoline plants by Shell Oil Company at Norco, Louisiana; Standard Oil Company (Ohio) at Toledo, Ohio; Standard Oil Company (Indiana) Whiting, and Standard Oil Company of California at El Segundo; The Texas Company at Port Arthur; Gulf Refining Company at Port Arthur; Tidewater Associated Oil Company at Avon, California, and Humble Oil & Refining Company at Baytown, Texas.

Present aviation gasoline refinery production is about 40,000 barrels a day, with demand at 120,000 barrels, Ickes said, announcing that he would meet October 20 with the chairmen of the aviation-gasoline subcommittees from the refining branch to discuss plans for expanding productive capacity to at least the current demand level. Also, he said, conferences are going on with officials of the Reconstruction Finance Corporation on methods of financing additional new plants and of providing term contracts for output.

Tanker Fleet

With the award of contracts for the construction of 49 additional tankers, the United States "is building the largest and most modern tanker fleet in the world," according to officials of the United States Maritime Commission.

That fleet, including 62 vessels now being built under private contract for individual operators, 97 already scheduled and building under the commission's program, and the 360 now in operation, will total 568 oil carriers, compared with 432 vessels owned by Great Britain, which formerly had the largest fleet.

By December 31, 1943, 208 new tankers of 2,196,300 gross tons will have been put in operation, it was said.

The new contracts call for the construction of 36 vessels by Alabama Dry Dock & Shipbuilding Company, at Mobile, and the remaining 13 by the Bethlehem Steel Company at Sparrows Point, Maryland. First keels will be laid in December or January and deliveries will start by August of next year.

The Mobile-built vessels will be identical with those under construction at the Sun Shipbuilding & Dry Dock Company plant at Chester, Pennsylvania, where 87 tankers are under contract for the commission and 28 for private account. They will be of 10,750 gross tons with a capacity of 138,000 barrels, with a speed of 14½ knots.

Bethlehem Steel Company will turn out vessels of The Panama Transport type, with the same gross tonnage as the Mobile ships but with a speed of 15½ knots.

When these vessels are completed, a total of 159 tankers will have been delivered under the commission's shipbuilding program, in addition to 23 national defense high-speed tankers. Thirteen already are in service, one will be delivered this month and another is to be completed in December. The commission itself so far as planned or contracted for 146 tankers of a gross tonnage of 1,571,750 tons, to cost approximately $395,000,000. The total capacity of the vessels will be 827,000,000 gallons. Private interests have under contract 62 tankers of 614,550 gross tons.

In a purely experimental move to aid in the solution of the tanker problem, the United States Maritime Commission announced October 15 that it had adopted a program for the construction of 15 concrete barges, to be built in lots of five in three yards located on the Atlantic, Gulf and Pacific Coasts, respectively.

The barges, to be of reinforced concrete, will be approximately 360 feet in length with a maximum loaded draft not in excess of 28½ feet and a capacity ranging from 5000 to 8000 long tons, depending upon the commodity carried.

Negotiations for the construction of the boats are under way with three firms which submitted the most satisfactory proposals in response to the commission's invitation for bids last month.

Some criticism has been voiced of the commission's change of plans, which originally contemplated the construction of 100 of the barges, but commission officials said the present program is merely designed to explore the possibilities of this type of construction. Further, it was disclosed, many of the bids received last month were from bidders neither financially able or sufficiently experienced to undertake the work.

Meanwhile, there have been no new developments in the proposed return of 10 to 15 of the tankers diverted to the British service last spring, Coordinator Ickes said. Edward W. Pauly, who went to London as Ickes' personal representative August 14 to look into the tanker situation, has returned to Washington but has not yet re-

ported to him, Ickes said, and he has heard nothing further from the British regarding the matter.

Car Movements

Another increase in the volume of oil moved into the East Coast area by rail was reported by Coordinator Ickes, with figures showing that 4322 tank cars were shipped into District No. 1 from outside that area during the week ended October 11, compared with 4099 cars in the preceding week.

Telephonic reports by the companies to the coordinator's office showed that the movement consisted of 243 cars for Gulf Oil Corporation; 1239 cars for Standard Oil Company of New Jersey; 181 for Socony-Vacuum Oil Company; 175 for Tidewater Associated Oil Company; 191 for Cities Service Oil Company; 585 for Sinclair Refining Company; 560 for Pan American Petroleum Company; 325 for Shell Oil Company; 396 for The Atlantic Refining Company; 272 for The Texas Company; 59 for The Pure Oil Company; 23 for Sun Oil Company and 59 for Standard Oil Company of Kentucky.

Moffett Replies

In a sharp retort to Coordinator Ickes' article on the oil shortage, in *Collier's Magazine,* James A. Moffett, chairman of the board of California-Texas Oil Company, declared on October 17 that "not only is there no oil shortage but there never was an oil shortage."

Moffett asserted that the 1940 stock figures on which Ickes has based his findings on a shortage represented an "excessive stock" of gasoline built up as a result of heavy fuel oil production during the preceding winter.

Far from being short of supplies, he said, Standard Oil Company of New Jersey now has 2,000,000 barrels more gasoline on hand than a year ago, and other concerns "are in good shape for extra supply." Many companies have not used tank cars to the fullest extent because "they don't want to fill their storage tanks so full and overflowing that they will go into the slack winter season with a lot of gasoline on hand and therefore have to shut down their refineries."

The oil company executive renewed his attack on the use of tankers by the British, declaring that 72 ships have been diverted, which now could and should be returned.

He criticised Ickes' statement that some of the ships which are to be returned will be required for the hauling of molasses, declaring that the molasses companies have sufficient tankers to move the season's run and contending that there is no need for the use of tankers to haul molasses to the United Kingdom. Twelve large tankers, he said, are now being used for that purpose, and half the number would be sufficient if the molasses was distilled in this country and the products sent abroad.

Conference

W. S. Farish of Standard Oil Company of New Jersey; John A. Brown of Socony-Vacuum Oil Company and J. Howard Pew of Sun Oil Company conferred the greater part of October 17 with the coordinator, reportedly on the gasoline situation, but none of those involved would discuss the subject of their talks.

Conservation

Adoption by the producing states of a comprehensive program of conservation to be applied to so-called condensate pools, including "gas-cap" pools with the essential characteristics of condensate pools, was demanded during the week by Coordinator Ickes.

The "recommendation" of the coordinator was based on the need for effecting the ultimate maximum recovery of hydrocarbons from such pools with a minimum use of critical materials, to prevent losses of hydrocarbons needed for the production of aviation gasolines.

Ickes pointed out that the liquid hydrocarbons recovered from such pools possess qualities especially desirable for the production of aviation gasoline "and other products now demanded in ever increasing quantities for the defense of the United States" and held that "carefully controlled development and operation of condensate pools are particularly essential to prevent the irreparable loss of a large proportion of the hydrocarbon content of such pools through the condensation in the underground reservoir of those hydrocarbons existing in the gaseous phase when the natural pressure in the reservoir is lowered below the dew point of the hydrocarbon mixture in such pool."

The conservation program recommended called upon state officials and owners and operators of such oil properties to:

"Direct all operations including but not limited to cycling and pressure maintenance toward obtaining the maximum economic recovery and utilization of the liquid and gaseous hydrocarbons ultimately producible from such pools.

"Refrain from removing 'lean gas' from such pools for sale as 'dry gas' or for processing into distillate and 'tail gas' where such removal might have a tendency to reduce the ultimate quantity of liquid hydrocarbons recoverable from such pools.

"Conduct all further drilling and development of such pools in such manner as to use minimum quantities of steel and other materials necessary to obtain maximum economic recovery.

"Conduct all further production operations in such manner as to utilize most efficiently the limited quantities of materials and equipment that are now available and to utilize most efficiently the natural energy of the reservoir whether it be in the form of compressed natural gas or in the form of a natural water drive.

"Submit to the office of petroleum coordinator for national defense, for its guidance in making recommendations with respect to priorities and the allocation of materials to be supplied both for drilling, construction, producing, and transportation operations in such pools, and for handling the products to be delivered from such pools, detailed plans for the orderly development and operation of each such pool in the interest of national defense to the end that:

"(a) Development shall be conducted on the widest practical uniform spacing pattern and the unitization of individual properties shall be effected to whatever extent may be necessary to render such patterns equitable; and

"(b) Rates of production and production practices shall be such as to provide for the most efficient and economical use of all materials, supplies and equipment employed in development and operation; and

"(c) The disposal of the liquid and gaseous hydrocarbons produced from such pools shall be such as to provide for their most effective use as essential materials needed for national defense and essential civilian requirements."

The term "pool" was defined in the order as "any underground accumulation of oil, gas, or associated hydrocarbon substances constituting a single and separate reservoir, or source of supply within a field, area, or horizon, whether or not

[*Continued on page 59*]

Improved Prices of Products Would Support Crude Raise

By L. J. LOGAN, Associate Editor

ALTHOUGH special reasons are being given as to why crude oil prices of the Southwest should be increased, an immediate general advance can be well supported even by the ordinary statistical and economic considerations normally considered in connection with crude-price changes.

Producers who went through the depression and the erratic recovery of the 1930's were thoroughly schooled in the economic fundamentals involved, having been reminded repeatedly by purchasers that the price of crude oil ultimately must be determined by the prices that can be realized for the finished products made from it. Sincerity of purchasers in reducing crude postings could not be doubted when refineries were closing for lack of profit.

Fundamentals Same

With equal simplicity, the crude market of today may be analyzed. The economic fundamentals remain the same, but they now are reacting to an opposite set of circumstances. As always, the price of crude is seeking a level commensurate with the prices that can be realized for the finished products made from the raw material; and it so happens that the prices of products have been and still are steadily edging upward, although the improvement doubtless would be even greater in the absence of the restraints that are being imposed on all prices by the government.

Under the stimulus of record-breaking demand for virtually all the petroleum products, there has been this year a bidding up of prices offered to the refiners for their limited supplies; and in seeking to increase production of products which readily can be sold, even at higher prices, the refiners are willing and increasingly able to pay more for crude, to draw out larger supplies.

Since late May, when present prices of Mid-Continent crude were established, consumers of gasoline, through the middle men, have bid upward their paying prices of gasoline at the Mid-Continent refinery by ¼ cent a gallon or 5¼ cents a barrel, and are willing to pay more, as evidenced by continued edging up of the wholesale prices. Similarly, prices of other products at the refinery have been boosted upward in the process of consumer competition for available supplies. Consequently, the Mid-Continent refiner now realizes considerably more than in late May from the derivatives of a barrel of crude.

Relation of Crude Postings to *Weekly* Statistics on Prices in General

ITEM	May 24, 1941 (After Latest General Crude Raise)	Sept. 27, 1941 (Latest Weekly Figures Available)	Percent Increase in About 4 Months
Commodity Prices at Wholesale, Weekly Statistics of Department of Labor:			
Combined Index, 889 Commodities (1926=100).....	85.0	91.2	+ 7.3
Farm Products...	77.3	89.9	+16.3
Food.....	79.5	87.6	+10.2
All Other.....	87.7	92.0	+ 4.9
28 Basic Commodities..	143.6	155.6	+ 8.4
Price of Crude Oil, per Barrel:			
Okla.-Kansas, 36-36.9 gravity	$1.17	$1.17	.....
California: Signal Hill 26 gravity	1.11	1.11	.....
Penn. Grade, Bradford-Allegany.....	2.55	2.75	+ 7.8

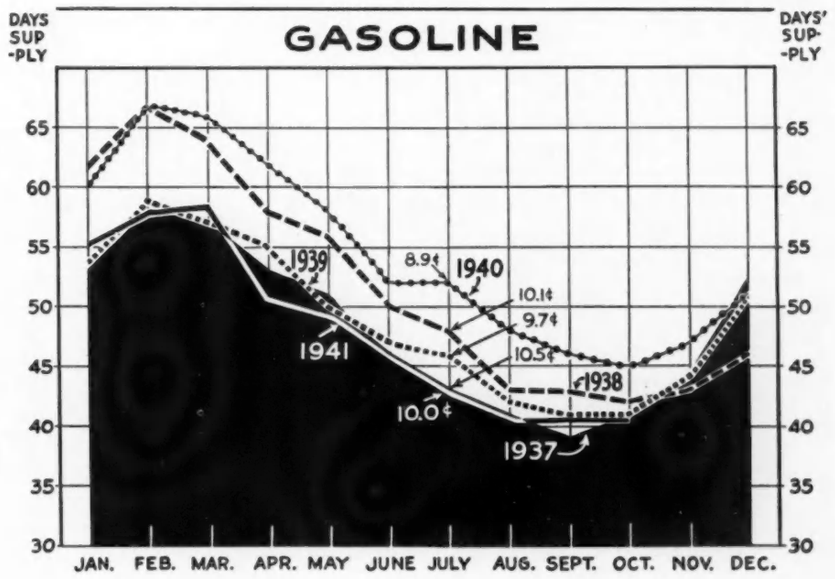
Days' Supply

Accompanying charts help to make clear the present situation in which supplies of petroleum products are light in relation to the prevailing unprecedented demand, with the result that relatively favorable product prices are promoted.

Measured in terms of days' supply at prevailing rates of consumption, stocks of gasoline are excep-

Good Inventory Situation Guarantees Firm Gasoline Market, Stocks on Hand Representing Relatively Few Days' Supply

Chart shows days' supply of gasoline in storage in United States at beginning of month and net price to dealer, excluding tax, at end of July in recent years.



tionally moderate, being smaller than in any other recent year, after having run during most of 1941 slightly under the monthly curve for 1937. Consequently, the price of gasoline has materially improved, and the price as reflected in net price to dealer is better than in other recent years except 1937, being about ½ cent lower than in the latter year, but 1-1/3 cents better than one year ago, the average having been 10.02 cents a gallon, excluding taxes, on September 1, 1941, against 8.69 cents on September 1, 1940.

Similarly, stocks of other products are relatively small and prices are improved and improving. Inventories of light-fuel oils in the United States, in terms of days' supply, are smaller than a year ago and the price of No. 2 straw at Oklahoma refineries is approximately ½ cent a gallon better.

Stocks of kerosene, likewise, are smaller than a year ago, in relation to demand, and the price of 41-43 gravity material at Oklahoma refineries is 3/10 cent a gallon higher than at that time.

Heavy Fuel Off

Supplies of heavy-fuel oil in storage are materially lower than one year ago or two years ago, measured in terms of days' supply, and prices in the primary markets are better than in 1940 or 1939.

Stocks of lubricants are especially light in relation to present heavy consumption, and prices naturally reflect the tightness of supplies, as attested by the sharp improvement in prices of Pennsylvania grade lubricants, which has justified purchasers of Pennsylvania grade crude in advancing their postings for that oil several times this year.

With the stocks of all products thus exceptionally moderate in relation to prevailing and prospective consumption, and with supplies of crude for building up refined oil stocks less readily available than formerly, it is but natural that refiners are becoming increasingly concerned over their present and future supplies of raw material and increasingly willing to pay more for crude.

Seeking Connections

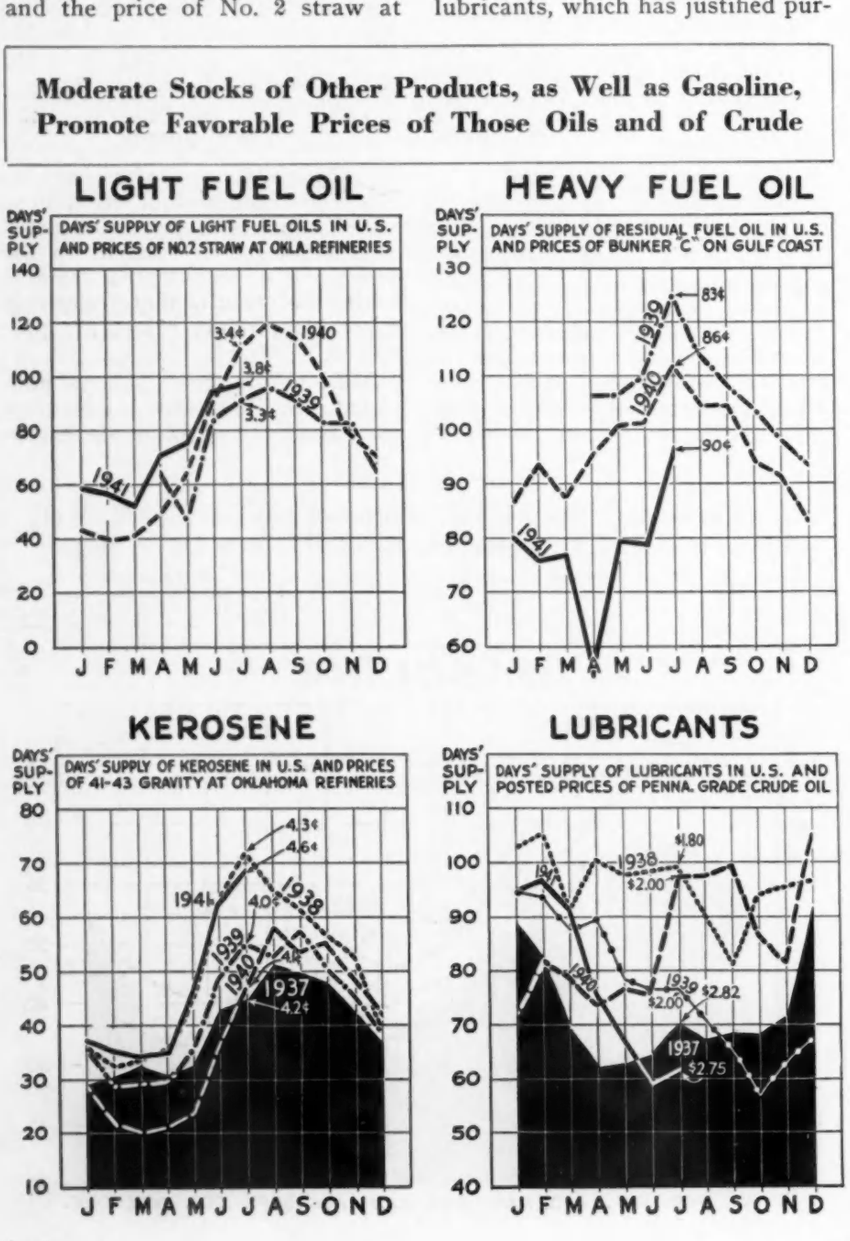
Evidence of inadequacy of crude supply already has appeared in numerous districts of the Southwest. In Oklahoma and Kansas, more purchasers and pipe-line companies are looking for well connections than for a long time, and some purchasers have been and are now offering premiums for crudes of special quality. Purchasers in East Texas are seeking in vain to line up additional well connections, and although premiums are not reported as being paid in Texas, they are being discussed as logically to be expected. Illinois has responded with a 100,000-barrel increase in daily output as purchasers have sought large quantities of crude for tank-car shipment to the East, but even larger volumes could be so marketed.

Under normal conditions, there would very likely have been before now a general Mid-Continent crude raise of at least 10 cents a barrel, in reflection of the competition of refiners for available supplies.

But under the anti-inflation efforts of the government, strict vigil has been kept over prices in the industry, and notice has been served that higher crude prices will not be approved unless justification is shown in the form of increased costs.

Consequently, the raise which is now contemplated is being justified through round-about, complicated evidence, involving intricate calculations of the costs of producing oil, which necessarily must be general in nature and subject to debate, although a good case is being made in showing that costs actually have increased materially. Aside from involving calculations that cannot be conclusive, many producers feel, the present approach is time-killing and involves delay that they cannot afford.

Moderate Stocks of Other Products, as Well as Gasoline, Promote Favorable Prices of Those Oils and of Crude



Unusual Features in Successful

Cooperative Repressuring

of Loma Novia Field

By TY DAVISON
Petroleum Engineer, Jo H. Cable

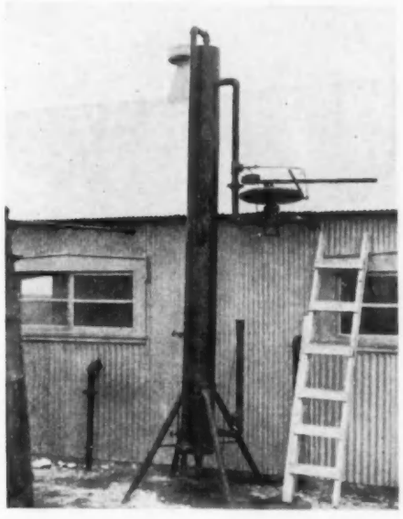
THE first year of repressuring at Loma Novia shows promise of good final results. This project is particularly interesting for two reasons. First, it is unusual in that 12 operators having 30 small leases in a field can cooperate in a repressuring program, disregarding property lines in the selection of key wells and input volumes. Second, the program is unusual because only the excess power from the pumping engines is used to drive the compressors.

Location

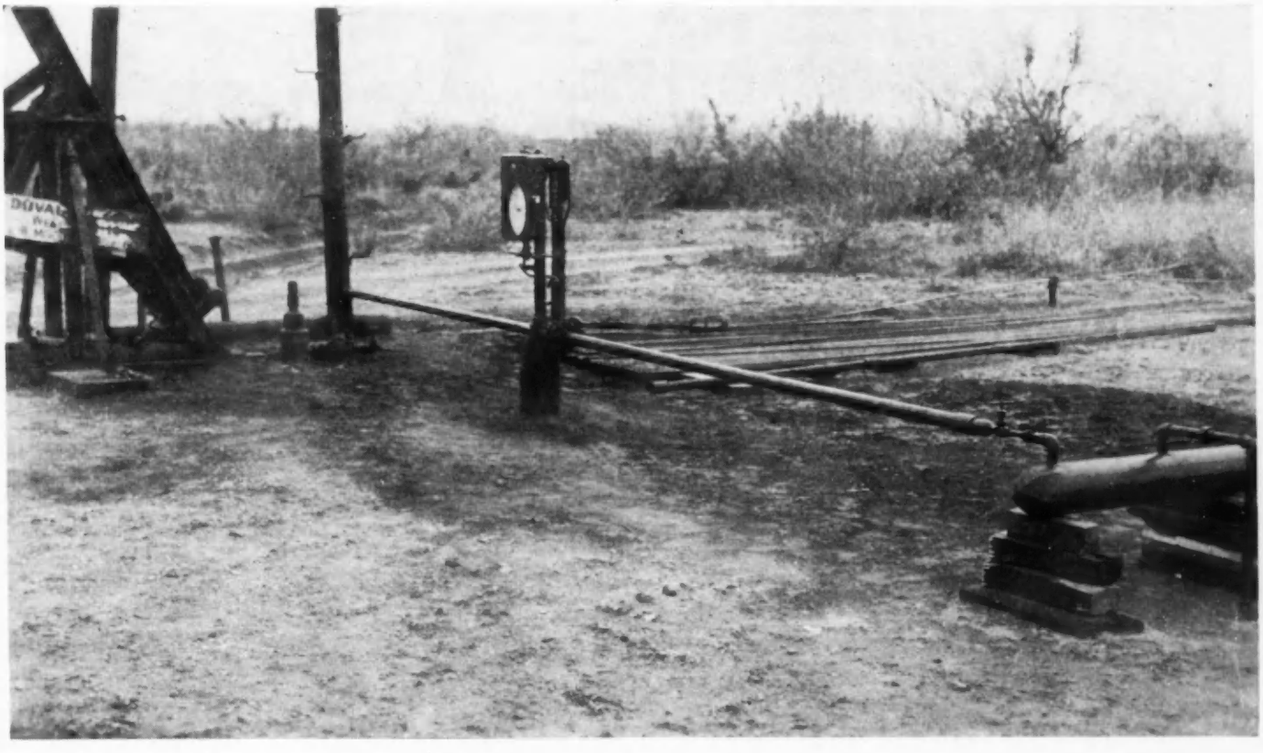
Loma Novia is located in north central Duval County, Texas, ½ mile east of the town of Freer. The first well was completed by Humble Oil & Refining Company, December 27, 1934. By the end of 1937, 758 wells were drilled in the field; 106 were dry or have since been abandoned.

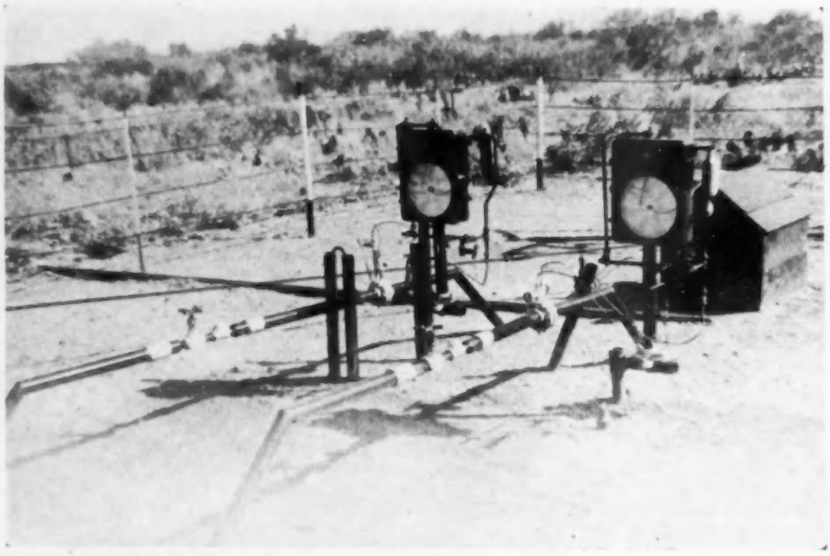
Original Conditions

The Loma Novia sand is a monoclinal sand lens, indicating an offshore deposit. The lens dips approximately 80 feet per mile southeast. The sand ranges from 5 to more than 30 feet in thickness, averaging approximately 15 feet. Shale interbedding occurs throughout the field, being more pro-

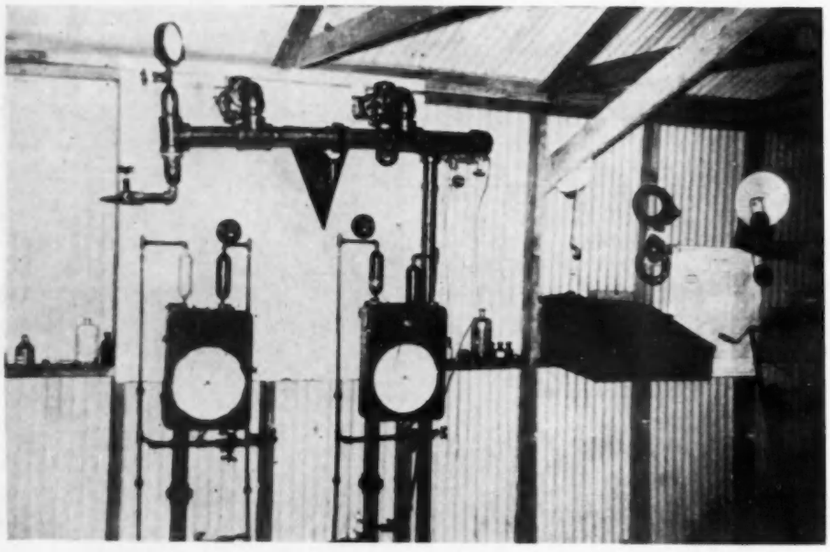


Below: Key well and meter — gas from high-pressure line. Right: Incoming scrubber and regulator.

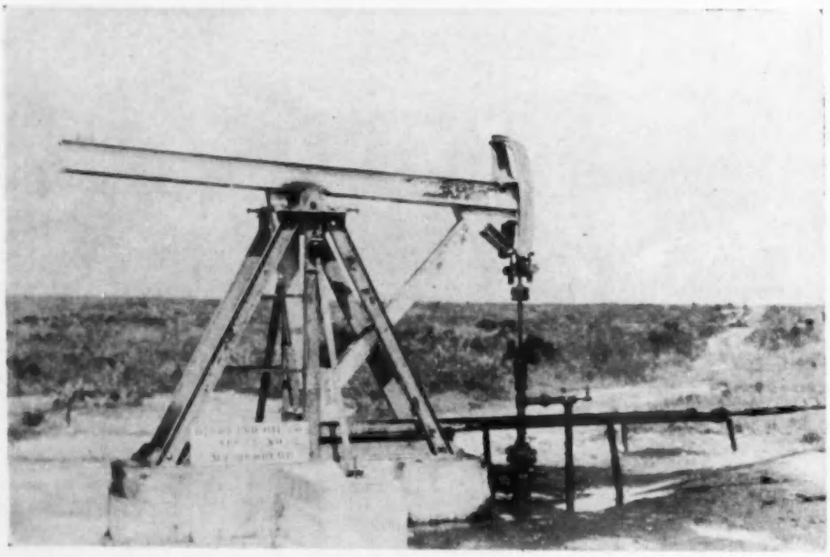




Keywell metering equipment and controls outside power building



Keywell metering equipment and controls inside power building



Pumping jack, typical of all in the field

nounced along the west and north edges. The shale beds are not continuous and hence are not indicative of low recovery. The top of the sand was tapped at 2550 feet to 2705 feet. In area, the field covers 6750 surface acres, within well defined limits.

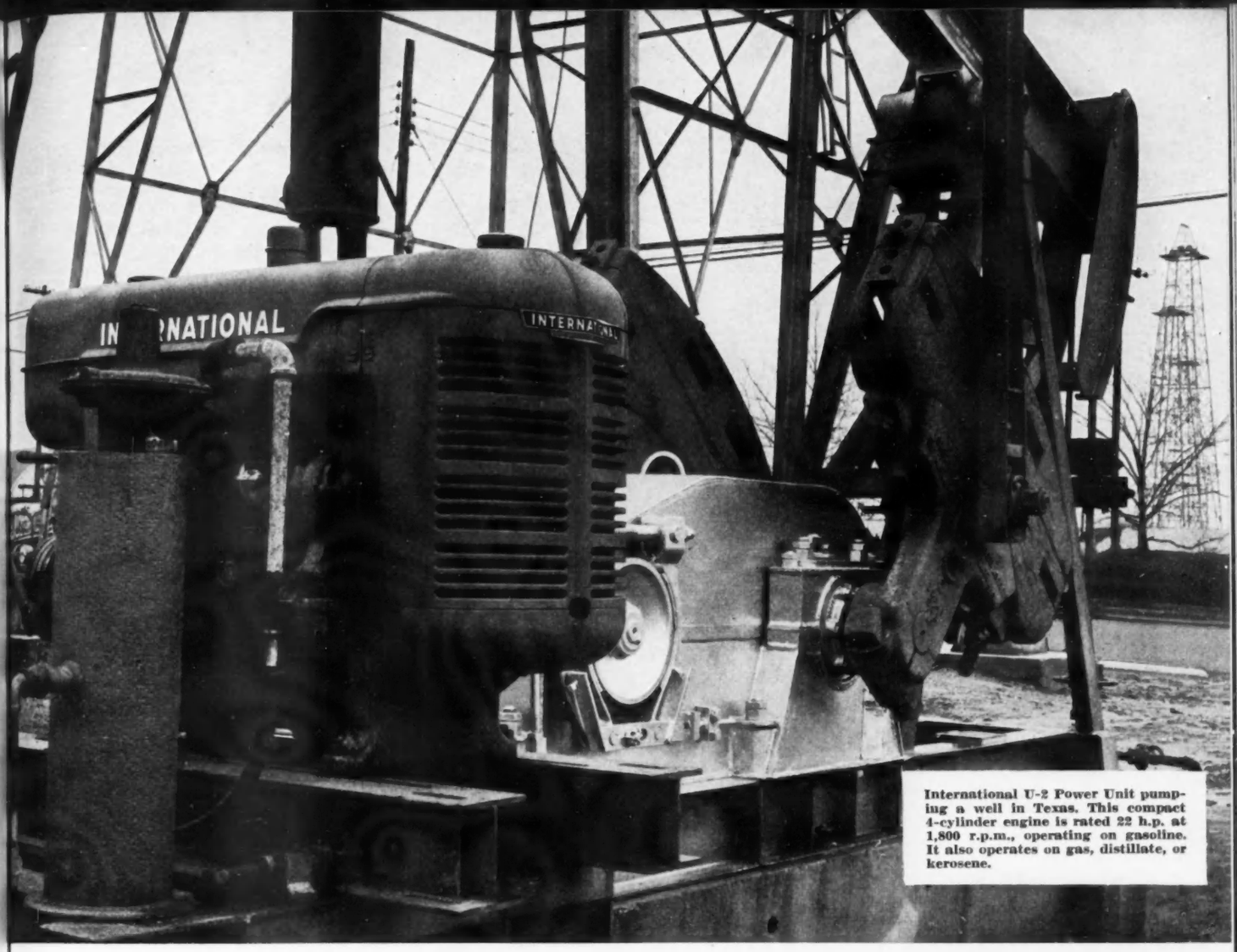
The original bottom-hole pressure averaged 1050 pounds. Unlike the Government Wells field to the west, there is no active water drive. Areas in the north and west parts of the field originally indicated a gas cap, but the pressure was rapidly depleted with withdrawals of oil and gas; therefore, no active gas drive is present.

Development History

Initial production of the wells was from 5 to 50 barrels of oil per hour with an average of about 30 barrels per hour. The gravity of Loma Novia crude oil averages 26° A.P.I. A peak allowable of 20,808 barrels per day was reached in August, 1937, when the allowable was 30 barrels per well and 31 producing days. The maximum allowable for August, 1941, is 25 barrels per well per day for 21 days.

The average flowing life of the wells was approximately 18 months. No wells in the field are flowing at present. All wells are equipped with pumping equipment—either units, two well hookups, or powers. Since most of the leases now are sub-marginal, nearly all wells are pumped 24 hours. The initial produced gas/oil ratios were low, some being reported as low as 40 cubic feet per barrel. Average gas/oil ratio is approximately 500 cubic feet per barrel. As the gasoline content of the gas and the gas/oil ratios were low, no gasoline plants are operating in the field.

Since the field was rapidly developed, few cores were taken; however, those recovered indicated porosity of 25 percent and saturation 80 percent. Permeability varies from 10 to 4500 millidarcies. Based on 25-percent porosity, 80-percent saturation, and 15-foot sand thickness, there were 157,504,500 barrels of oil in place originally in the Loma Novia sand. The normally anticipated recovery from this type field, assuming 25-percent recovery, would be 39,376,125 barrels. August 1, 1941, there have been 20,468,070 barrels of oil produced from the sand or 52 percent



International U-2 Power Unit pumping a well in Texas. This compact 4-cylinder engine is rated 22 h.p. at 1,800 r.p.m., operating on gasoline. It also operates on gas, distillate, or kerosene.

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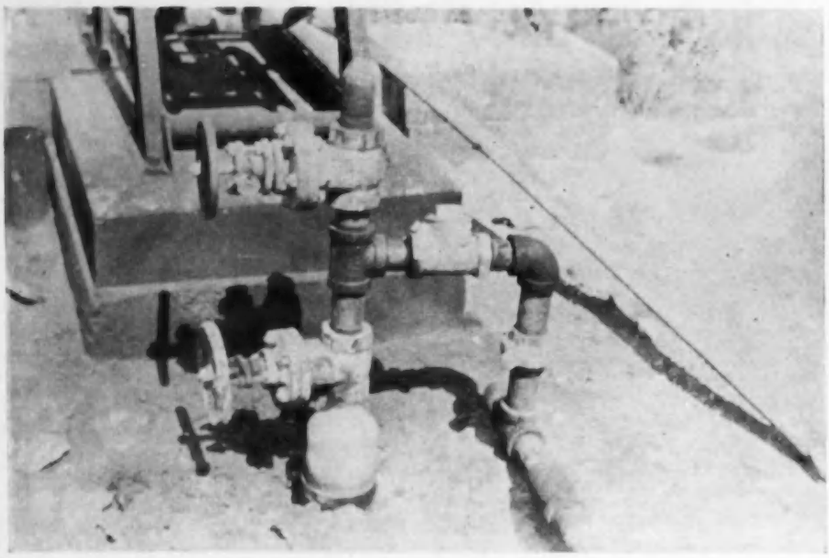
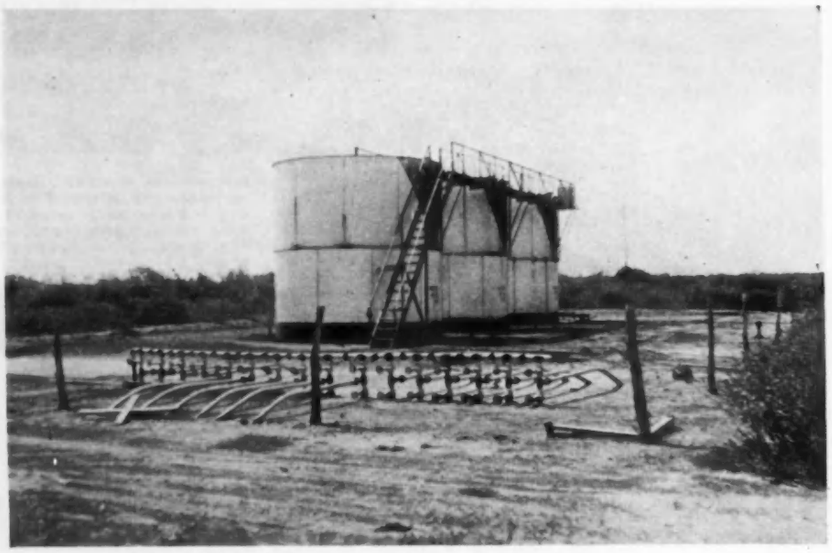
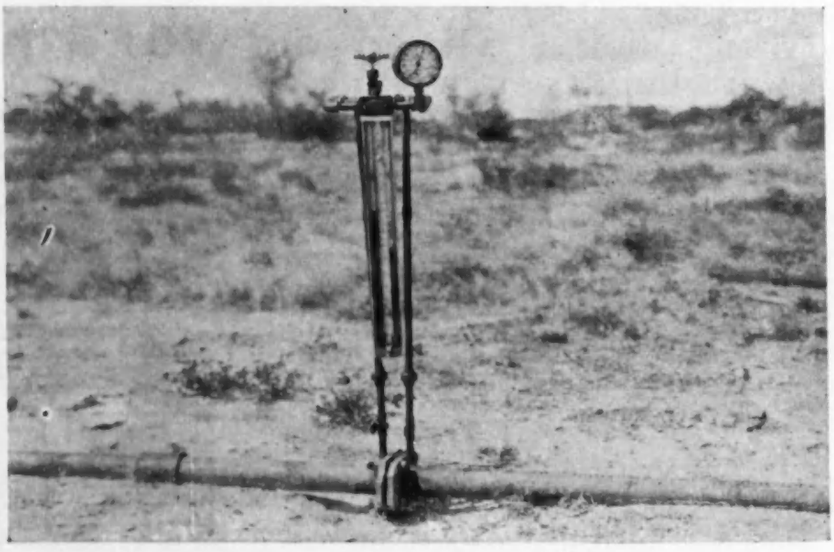


Keywell hookup



Tank battery and oil test manifold



Method of testing gas from producing wells

of the normally anticipated recovery.

Proration

As is the case in a great many prorated oil fields, the rapid decline in oil production was not apparent until it became very pronounced. With depletion of the original reservoir energy, oil production started an abnormal decline. It became apparent to the operators that secondary recovery methods should be employed to obtain a greater percent of the oil in place. Because of the presence of the shale beds throughout the field, water flooding was not considered practical.

Early Repressuring Tests

Several experiments of repressuring have been conducted on edge leases with some good results. Bridwell Oil Company started repressuring with one key well on its Hubbard "D" lease in December, 1937. This lease is on the edge of the field, and the oil production started to decline rapidly as soon as it was drilled in. The initial injection pressure was 800 pounds. (Gas is being injected into a different key well on this lease at 185 pounds at the present time.) An average of 30,000 cubic feet per day was injected for two years. There was no evident increase in oil production, but the decline in production was at a much lower rate than similarly situated leases.

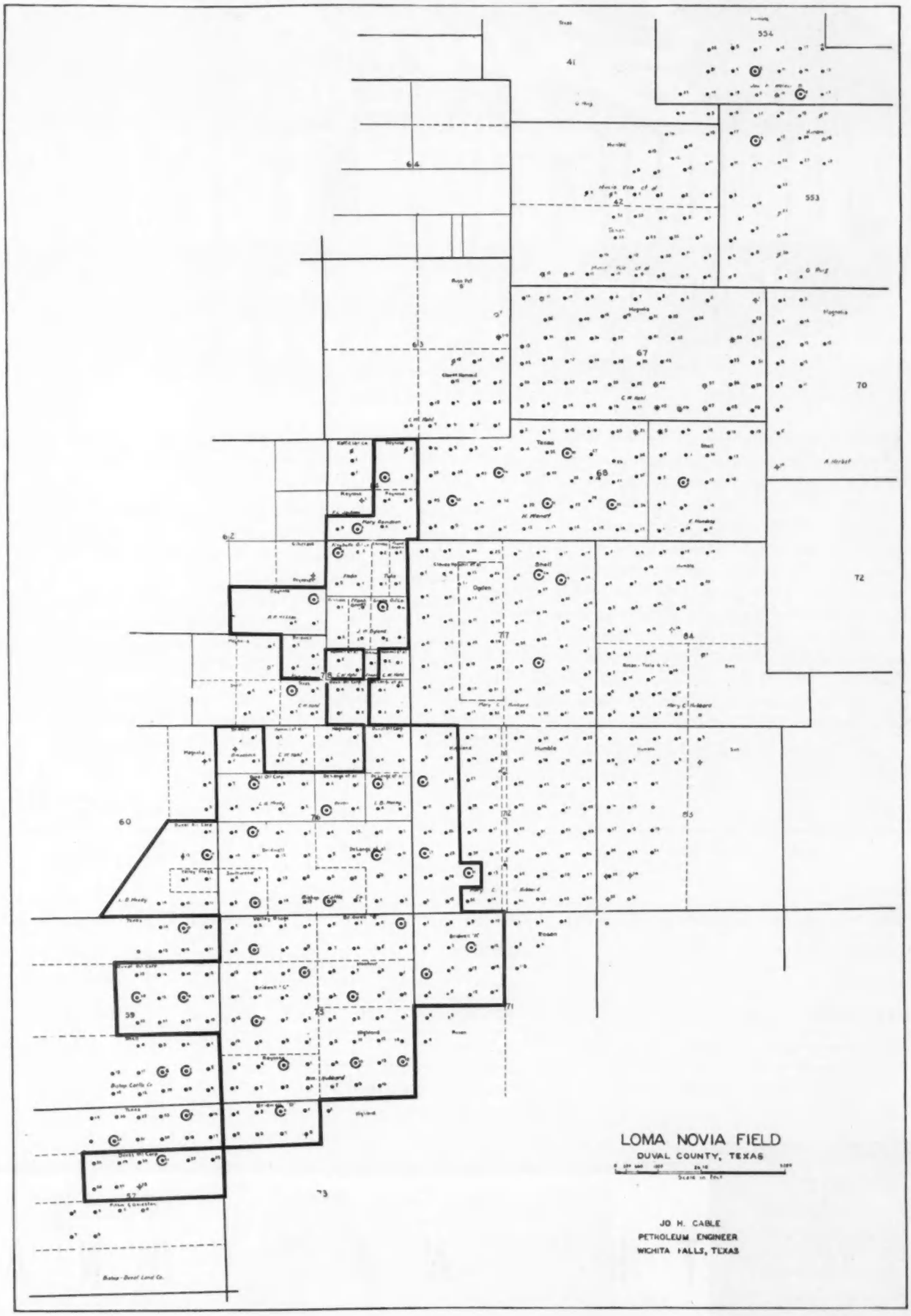
Shell Oil Company, The Texas Company, and Duval Oil Corporation started repressuring their leases on the west edge of the field in January, 1940. All these operators had good results and have expanded their repressuring operations to all their leases in the field. It was not until August, 1940, that large-scale cooperative repressuring operations were begun.

Small Owners Organize

Several attempts were made to organize the whole field to initiate a repressuring program as early as 1938. R. F. Schoolfield of Duval Oil Corporation was made chairman of a group to investigate the possibilities of repressuring in Loma Novia. The major part of the companies, however, did not seem interested enough to share the cost of a representative test.

In April, 1940, the independent operators employed Jo H. Cable, consulting represurring engineer, to make a survey in regard to the possibilities of repressuring. This

INTERNATIONAL Industrial Power



Superior OIL FIELD PRODUCTION ENGINES

Medium-Speed Vertical 2-Cycle, 2-Cylinder GAS ENGINES

SUPERIOR medium-speed vertical twin-cylinder 2-cycle gas engines are more economical to operate, have a longer life expectancy and can be installed with only slightly more expense than the high-speed multi-cylinder types of engines. Many hundreds are in use driving single well pumpers, pumping gears, geared powers, and kindred applications where loads range from 5 to 50 H. P. These vertical engines retain the simplicity, accessibility, reliability, long life and low operating cost that are found in the horizontal type which they resemble in design. Crosshead construction eliminates oil pumping and contamination of crankcase oil, thereby reducing lubricating oil consumption.

The engine is completely equipped with built-in clutch, water pump and radiator (excepting Type GB does not have radiator). The smaller sizes are usually mounted on extended pumper base for service in the open.

Double row Timken roller main bearings (excepting GB which has removable shells). Ground cylindrical crossheads run in honed guides. Full metallic packing for piston rods. Governor and magneto gear driven. Special mixer throttles both air and gas for good regulation. Roller bearings in clutch. Splash lubrication in crankcase, oil bath for gear box and force feed to cylinders.

Special provision for accessibility. Large hand holes in crankcase. Any assembly may be removed without disturbing engine on its mounting.

Conservatively rated for continuous service.

Twin-Cylinder Type	DVA	EA	FB	GB
Size, bore x stroke, ins.	4 x 5	5 x 6	6 x 7	7½ x 8
*Effective piston displacement per revolution	125.7 cu. in.	235.6 cu. in.	395.8 cu. in.	706.9 cu. in.
Rated B. H. P.	10	20	30	50
Rated R. P. M.	700	700	600	600
Speed range, R. P. M.	400-800	350-700	400-650	400-600
Descriptive Bulletin Number	280	293	174-B	217

*Multiply this displacement by 2, to obtain equivalent displacement of a 4-cycle engine.

DOMESTIC
EXECUTIVE OFFICES
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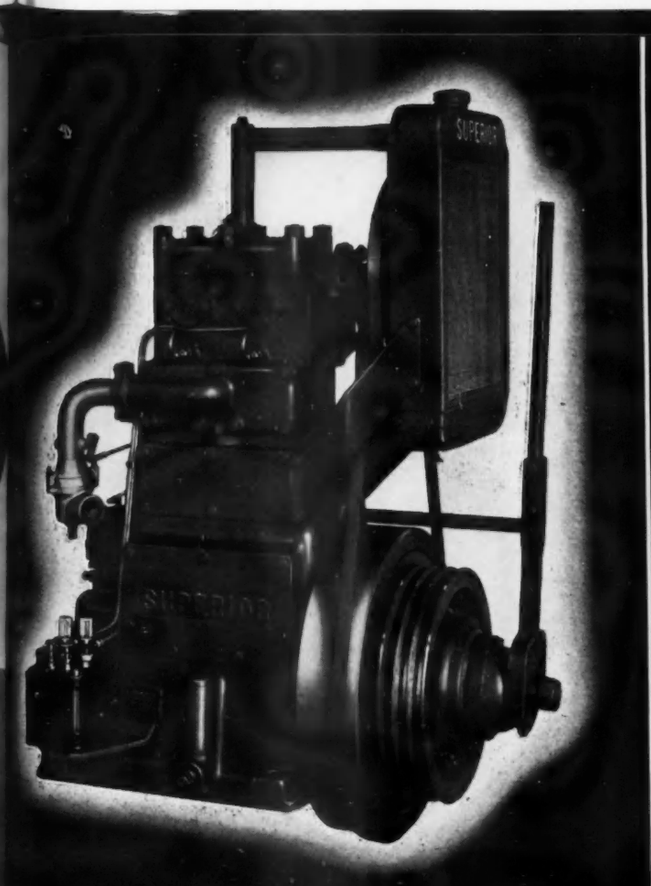
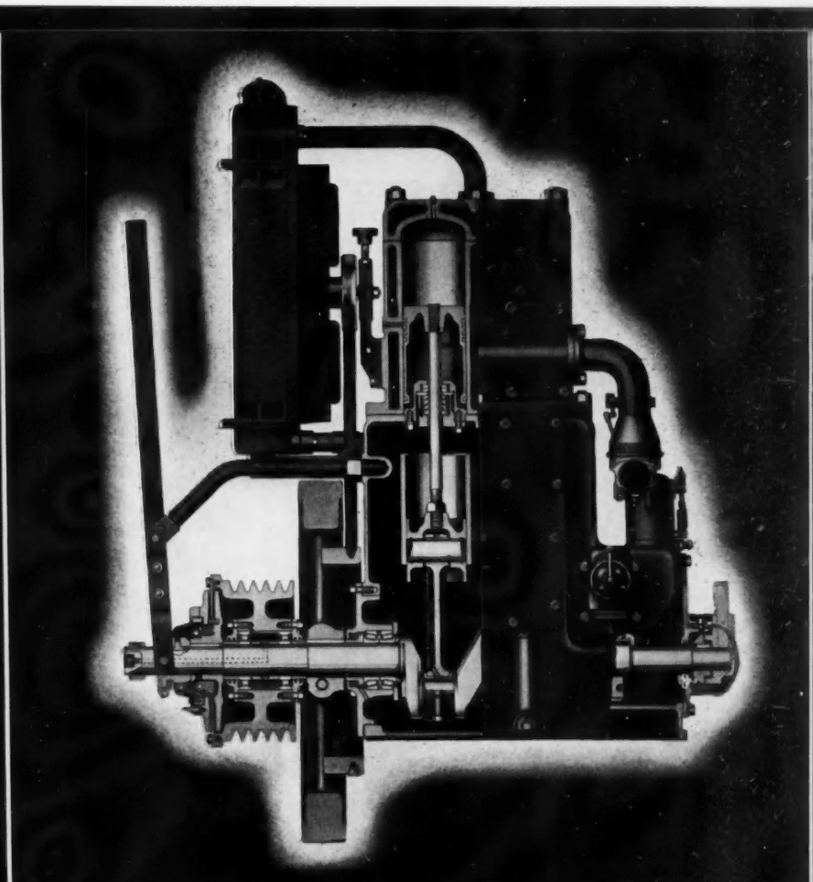
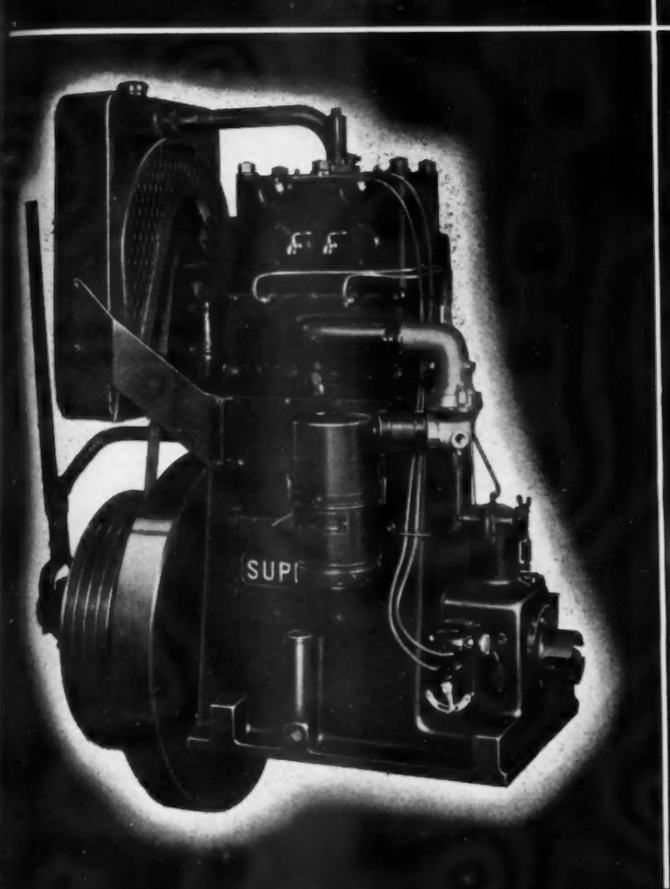
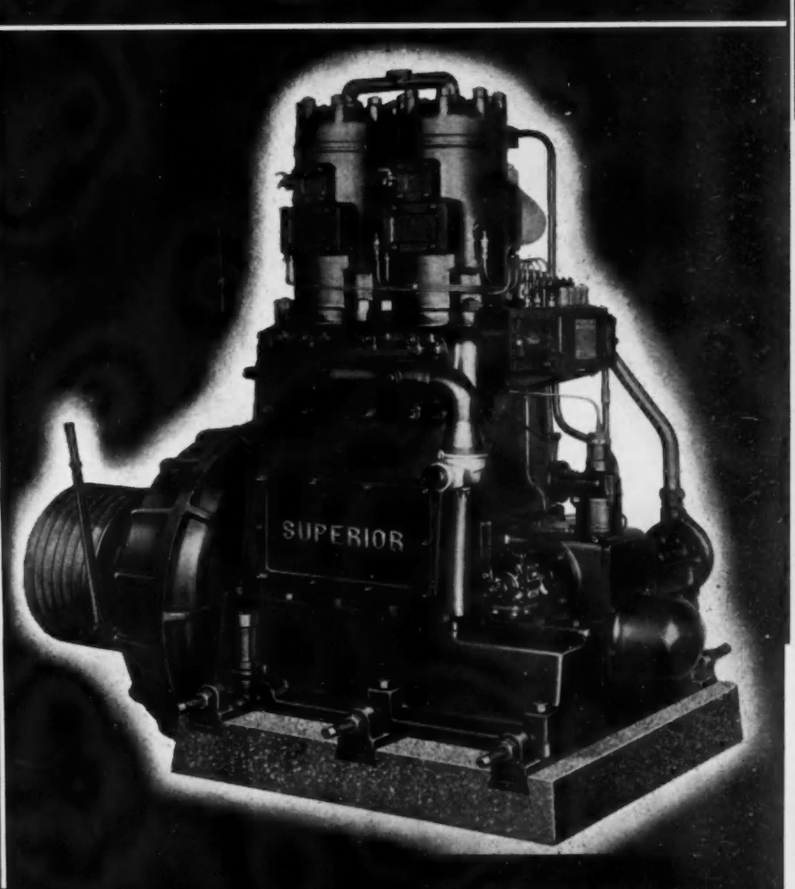
GENERAL SALES OFFICE
TOLEDO, OHIO
•
DIVISION OFFICES
FT. WORTH, TEX. • TULSA, OKLA.
TORRANCE, CALIF.

THE NATIONAL









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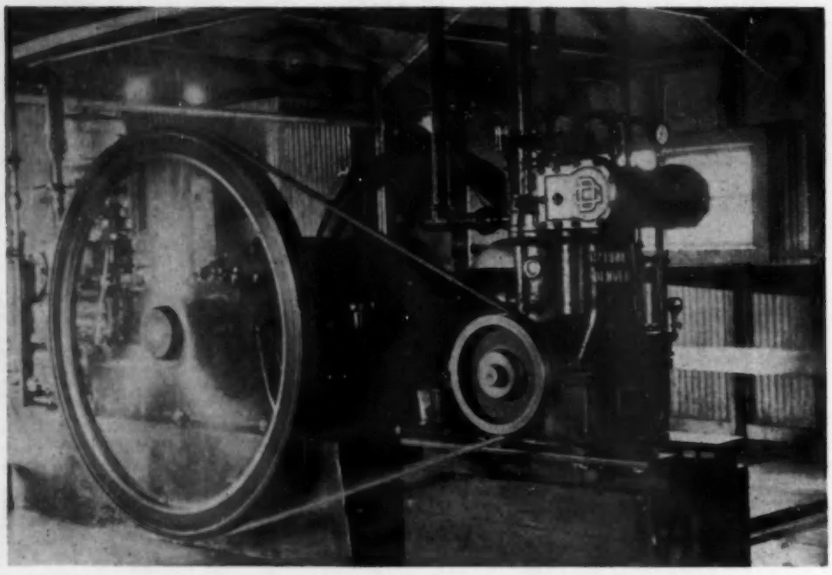
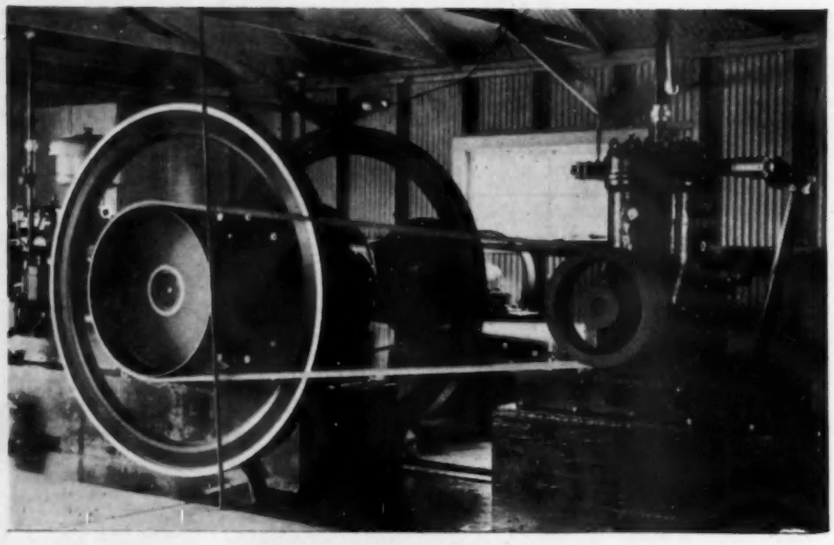
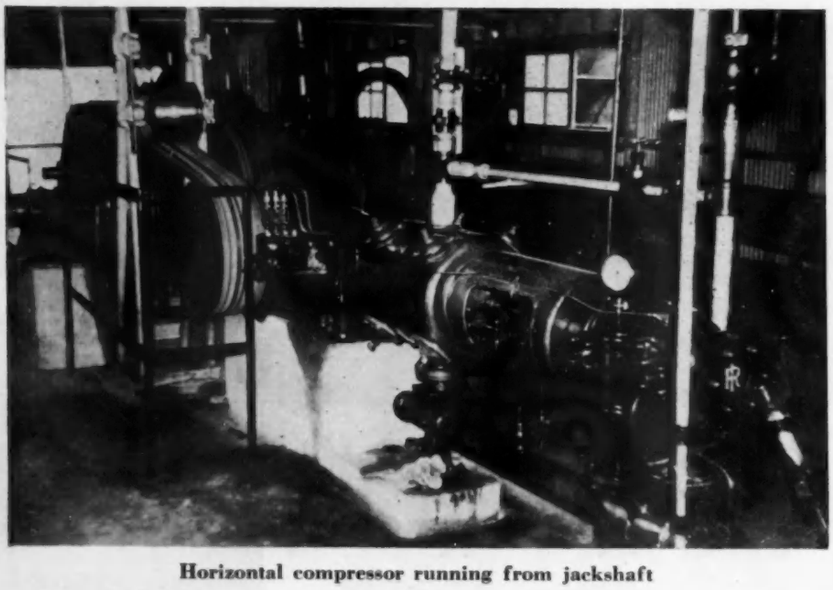
MARACAIBO, VENEZUELA



Two-stage vertical compressor



Single-stage vertical compressor



Horizontal compressor running from jackshaft

survey was conducted by Cable and his associate engineers—Gordon R. Stine, George P. Alden, and the writer. There were 1,729,600 cubic feet of gas or 533 cubic feet per barrel of oil available of which approximately half was used for fuel. By a study of logs, oil and gas production, and pattern, the key wells were selected and bottom-hole pressures were run to estimate the initial injection pressures. A survy of lease lines, power engines, and equipment was made to facilitate estimating the cost of gathering gas and constructing the compressor plants. The solution gas produced with the oil at the separators was negligible, therefore all the gas could be gathered at the casing heads. There was no effective water drive; the sand analysis indicated a high saturation and a low permeability; and a very low percentage of the oil had been recovered; therefore very good results could be expected from repressuring.

The operators, representing 220 wells, formed a cooperative repressuring group and employed Cable as engineer and coordinator. The compressor installations were started in July, 1940, and gas was being injected into 25 wells by October 1, 1940. At present, 388 of the 652 wells are being repressured. The operators are injecting gas into 30 of the 47 key wells.

Compressors Installed in Pumping Powers

When the pumping equipment was installed at Loma Novia, it was thought that a similar condition existed in the reservoir as in nearby Government Wells field; namely, that there was an effective water drive. Consequently, all powers were set to pump water. Since this condition of water drive did not exist and the wells produced practically no water, all leases were over-powered.

As there was sufficient gas produced from the casing heads to start repressuring operations, on leases where there was sufficient power, compressors were set to boost the gathered gas into the key wells. There are 14 two-stage and one single-stage compressor installations in the pumping powers. The capacities of the compressors are from 40,000 cubic feet to 150,000 cubic feet per day. Some of the smaller compressors are run by belts directly from the flywheel of the pumping engine. In other cases, a jackshaft has been installed to

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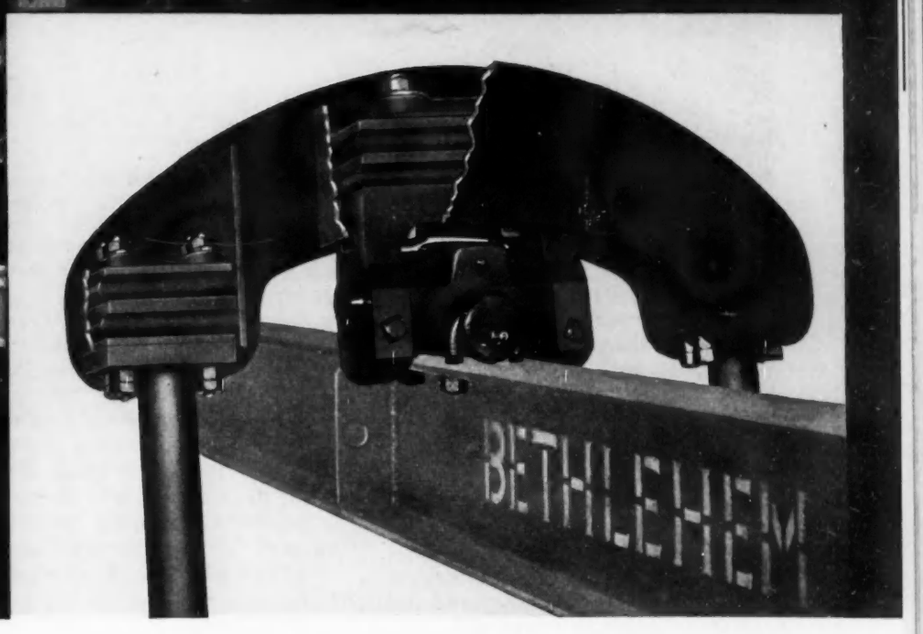
are cushioned against shock



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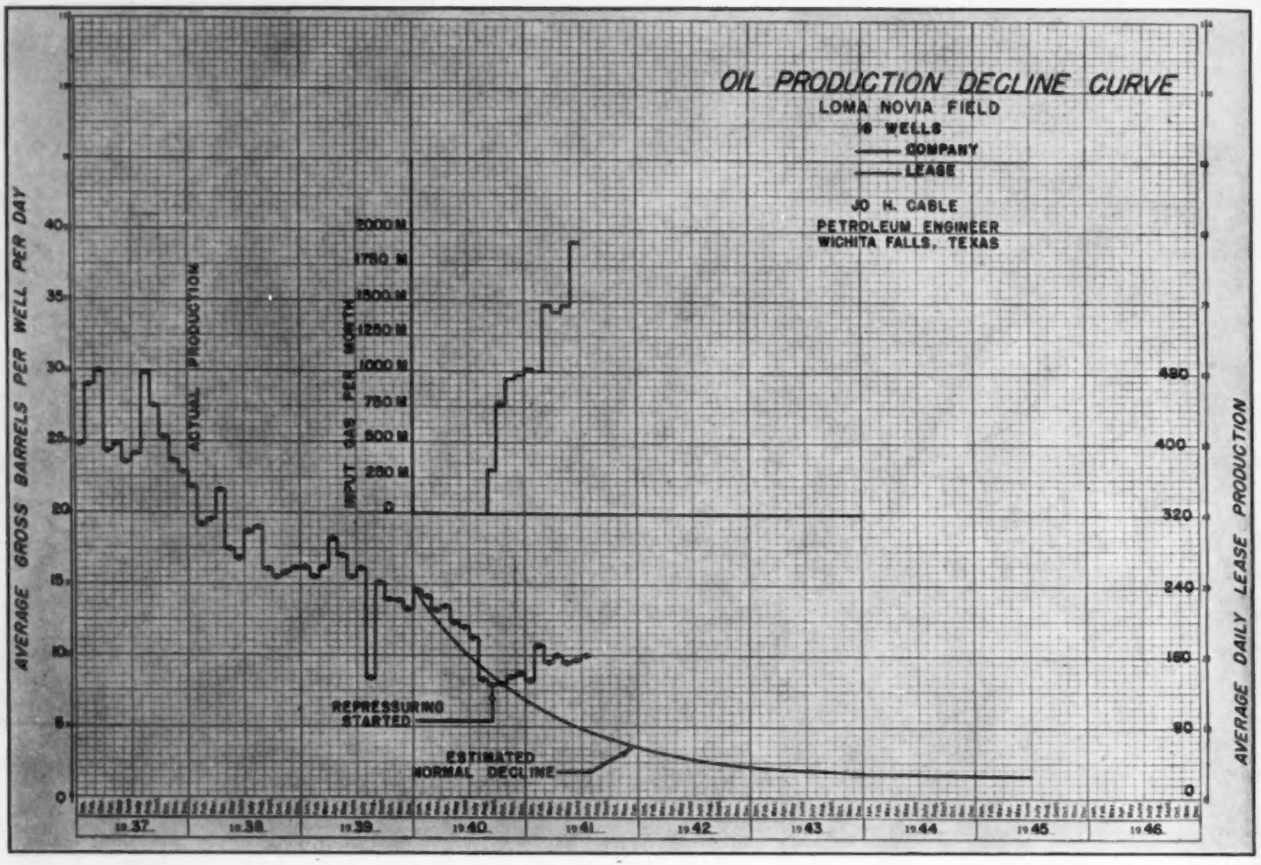

FIGURE 1

reduce the speed of the bandwheel power, and the compressors now run with belt drives from the jackshaft. One company has electric power available and is driving the compressor by an electric motor. Another company has the only direct connected compressor in the field.

In general, the compressor installations are similar. Gas coming from the casing heads of the producing wells is measured at each well through an economical orifice installation especially prepared for repressuring work. The gas first passes through a scrubber, which is usually a vertical piece of 10-inch or 12-inch pipe with connections welded, which collects scale and waste from the lines. The gas then passes through a regulator which is so constructed that the compressor cannot pull a vacuum on the casing heads of the producing wells (approximately 3 pounds back-pressure is being held on casing heads). The gas is cooled between stages; and upon leaving the compressor, it is passed into a drip, where the casing-head gasoline is collected, to permit measurement prior to injection into the key well. The controlled injection gas is measured to each key well individually through a recording orifice meter. Most of the key wells were prepared by pulling rods and tubing, and cleaning out. A swaged nipple and valve are put on the casing. The valve provides an entrance for measuring the hole without losing pressure and also a means of gradually reducing pressure on a well, or killing it prior to cleaning out or putting well back on production if it be deemed advisable to change key wells.

Key Wells

In the selection of key wells, pattern was the first consideration. The structure was fairly flat and had a more or less constant dip. There was no apparent water drive or gas cap. The sand was fairly uniform, and the shale beds were not continuous. Also considered in the selection of key wells were oil and gas production, well logs, equity, and effectiveness.

As indicated by the wide variation in permeability, the injection pressures into key wells vary from 20 pounds to 450 pounds. In some cases, the injection pressures may differ as much as 300 pounds in two locations. In general, the edge wells have the higher injection pressures; however, some injection wells in the center of the field have high injection pressures. These inside wells have not been produced hard and back pressures have been held.

The injection volumes were started low and gradually increased to the present volume of 320 cubic feet per barrel of oil produced by offsetting wells. This gradual increase of injection volume of gas made possible a thorough study of the effect of the repressuring. No wells are in serious condition because of channeling or by-passing. Only one well in the cooperative area has shown any tendency to by-pass, and this was checked by back-pressuring at the casing head.

Gas/Oil Ratios

Periodic tests are taken to obtain gas/oil ratios; weekly or bi-weekly gas tests and monthly oil tests are made on each well. All of the data of injection volumes and pressures, individual oil and gas tests, and back-pressures are compiled in a report and sent to each operator

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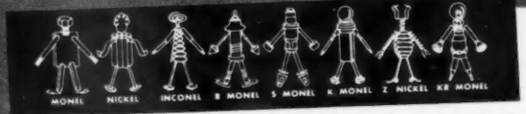

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MONEL* 2/3 Nickel 1/3 Copper	GENERAL PURPOSE ALLOY Corrosion Resistance, Strength, Hardness, Toughness. Attractive Silvery White Color.	Annealed	75	35	40	125	105
		Hot-rolled	90	50	35	150	110
		Cold-drawn	100	80	25	190	95
		Cold-rolled, hard-temper	110	100	5	240	
"R" MONEL* Contains the addition of .085% sulfur—	FREE CUTTING For High Speed Machining.	Hot-rolled	85	45	35	145	96
		Cold-drawn	90	75	25	180	99
"K" MONEL* Contains the addition of 2.75% Aluminum	EXTRA STRENGTH AND HARDNESS comparable to heat treated alloy steel. Heat Treatable. Non-magnetic.	Hot-rolled, As-rolled	100	45	40	160	120+
		Hot-rolled, Heat-treated	150	110	25	280	40
		Cold-drawn, As-drawn	115	85	25	210	56
		Cold-drawn, Heat-treated	155	115	20	290	26
"KR" MONEL*	FREE CUTTING Extra Strength and Hardness. Heat Treatable. Non-magnetic.	Hot-rolled, As-rolled	105	65	40	185	
		Hot-rolled, Heat-treated	150	105	25	280	
		Cold-drawn, As-drawn	115	85	25	215	
		Cold-drawn, Heat-treated	155	115	25	290	
"S" MONEL* Contains the addition of 4% silicon	EXTRA HARDNESS Non-galling.	Sand-cast, Annealed	90	70	3	275	
		Sand-cast, As-cast	130	100	2	320	
		Sand-cast, Heat-treated	130	100	2	350	
NICKEL 99.4% Nickel	CORROSION RESISTANCE Protection for Pure Products. Magnetic below 680° F. Good Electrical Conductivity.	Annealed	70	20	40	100	120+
		Hot-rolled	75	25	40	110	120+
		Cold-drawn	95	70	25	170	120+
		Cold-rolled, hard-temper	105	95	5	210	
"Z" NICKEL* 98% Nickel	EXTRA STRENGTH AND HARDNESS Heat Treatable. Excellent Spring Properties. Good Electrical Conductivity. Magnetic.	Hot-rolled, As-rolled	105	50	35	180	120+
		Hot-rolled, Heat-treated	170	130	15	320	25
		Cold-drawn, As-drawn	120	90	25	220	120+
		Cold-drawn, Heat-treated	175	135	15	340	25
INCONEL* 80% Nickel 14% Chrome Balance—Iron	HEAT RESISTANCE Retains Strength. Resists Oxidation. High Corrosion Resistance.	Annealed	85	35	45	150	120+
		Hot-rolled	100	60	35	180	110
		Cold-drawn	115	90	20	200	85
		Cold-rolled, hard-temper	135	110	5	260	

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each month. In this manner all of the operators can see what their properties are doing in relation to their offsets and to the whole project.

It is anticipated that at least 500 cubic feet per barrel of injection gas will be required to get the best results from the repressuring operations. Fuel requirements of the field consume more than half of the produced gas. Hence, outside gas is being added to the produced gas to meet the requirements of the injection volumes to the key wells. In the past year, more than 300 million cubic feet of gas has been returned to the sand.

Well Maintenance

Since only a few wells produce water, the field has not presented a difficult production problem. However, the interbedded shale has given some trouble by caving and plugging of liner and sand face. This shale, which resembles bentonite, volcanic ash, or rotary mud, swells when brought into contact with water, sealing the liner openings and sand face, and does not permit the oil to pass through the liner and be pumped from the hole. This condition is found mostly in areas of low injection pressures which indicates a high porosity and permeability. A gravel pack appears to be a remedy for this shale trouble. In gravel packing, the liner is pulled, the hole cleaned out and packed with gravel; the liner is then driven through the gravel which is cleaned out inside the liner, then the tubing run with perforations placed above the sand face. In most cases, this gravel pack has increased the oil production and has reduced pulling costs. The repressuring maintains the increase obtained by gravel packing especially where a back-pressure of more than 3 pounds is held.

Discussions of Methods

The injection of gas into an oil-producing formation not only forms a gas drive, but also makes the oil more fluid. As the gas which was originally in the oil is spent, the oil not produced becomes more viscous and has less tendency to flow to the producing wells. Even in areas where the injection pressures are as low as 20 pounds, the gas has an effect on the viscosity of the oil. At this low pressure, not much of the gas can actually go into solution, but it is believed that the gas dissolves in the oil making it less viscous and easier to drive or drain to the producing well.

To repressure an oil-producing sand and get results, it is not necessary to inject a quantity of gas into the sand equal to the oil and gas (under the same conditions) displaced. The relative quantity of injected gas, however, does have a direct effect on oil production. (See Figure 2.) It is believed that the best results will be obtained when the injection volume of gas exceeds the produced gas volume; thus keeping the viscosity and the surface tension of the oil at a minimum. The oil does not move to the producing well as a wall, but more as the elastic combination of oil and gas expands. The mass of fluid in an oil sand is in motion and moves toward areas of lower pressures leaving no void. This area drained at the producing well is constantly being refilled from points of higher formation pressure farther back in the sand. The viscosity of the oil is probably the most important factor in the ability of an oil to move through a sand.[1]

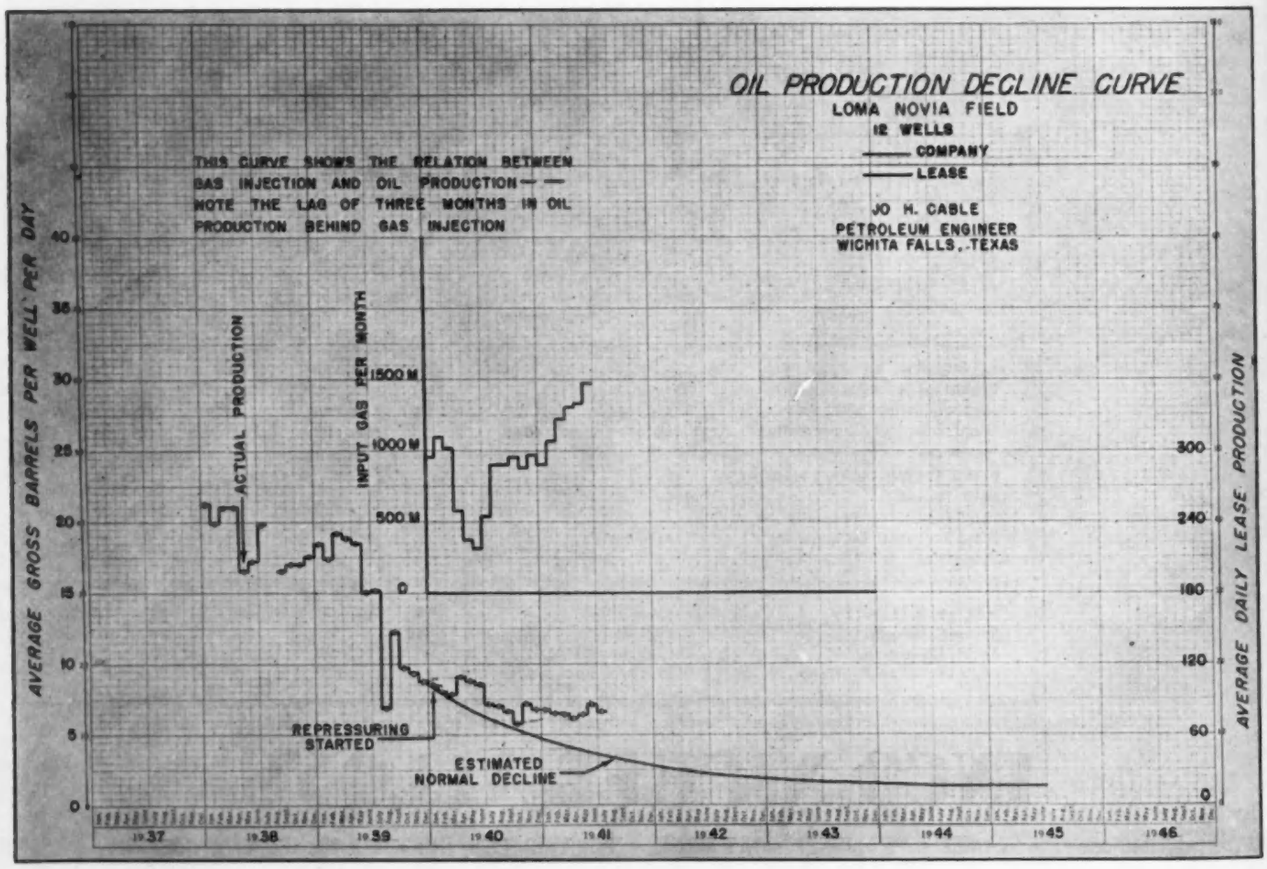
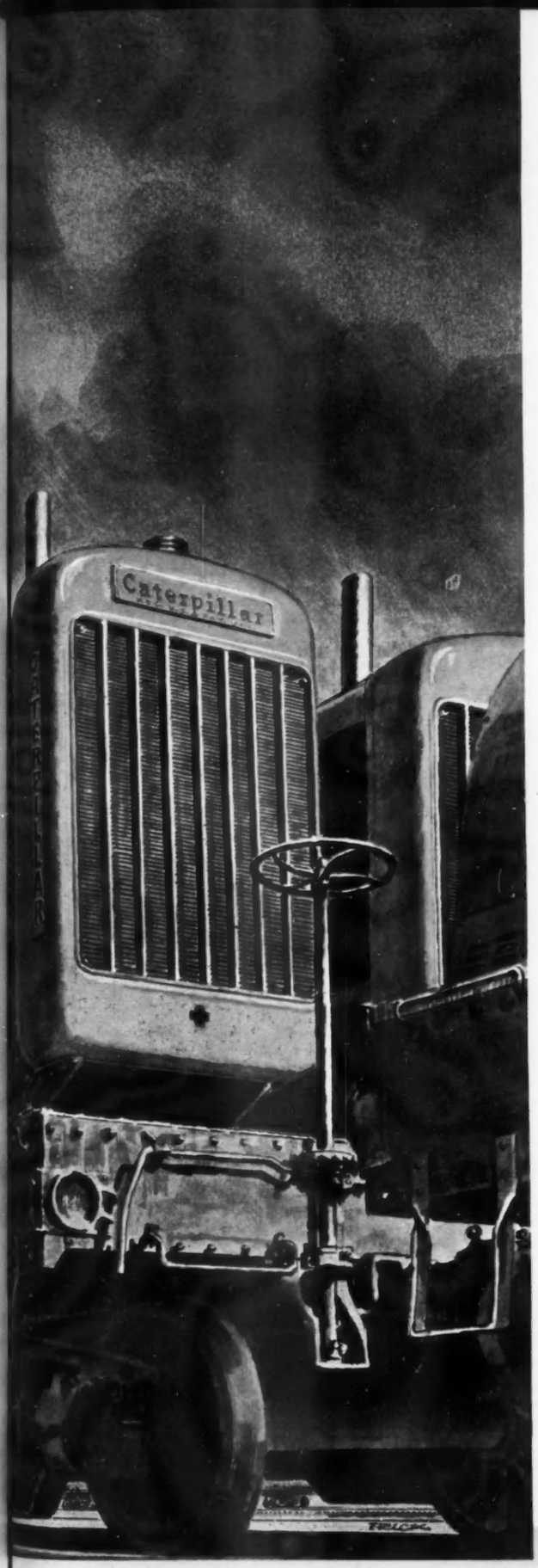


FIGURE 2



WHEN this nation rolled up its sleeves for the gigantic task of defense, one of its first needs was *power*.

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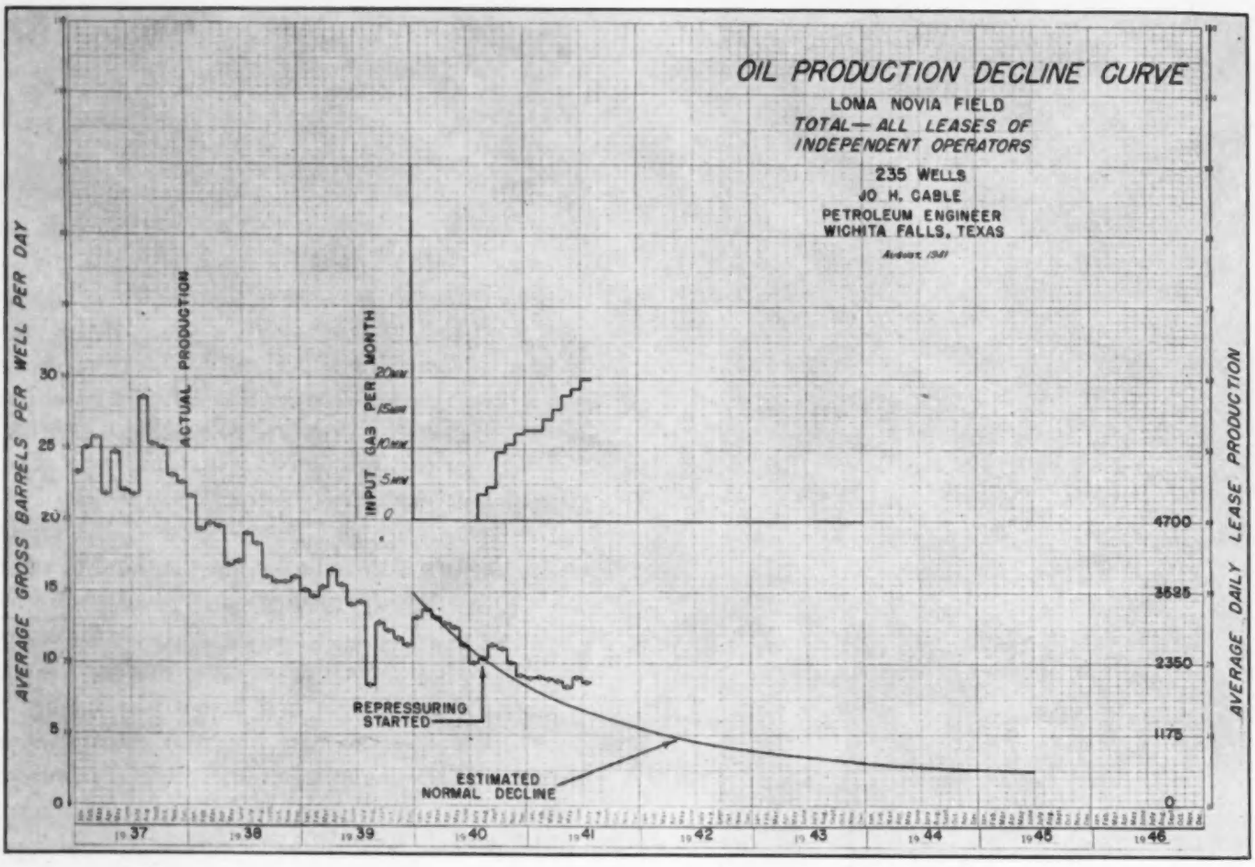


FIGURE 3

Beecher and Parkhurst[2] state that experiments have shown that oil saturated with a wet gas at 500 pounds pressure has half the viscosity of a gas saturated oil at 0 pound pressure. Solution gas also reduces the surface tension of oil; at 500 pounds pressure, the gas saturated oil had 20 percent less surface tension than a gas saturated oil at 0 pressure. The vaporization of the lighter hydrocarbons in solution in oil provides the motive power to move the oil to the producing well.

There has not been a drop in production in the past six months on leases in Loma Novia field which have been repressuring for the past year. As the starting injection volumes were low and gradually built up, the oil production for the group has not shown an increase; but in the past few months, several leases have increased materially in oil production where injection volumes have been periodically increased. (Note Figure 1.) One larger company, which started with low injection volumes, reports that the first oil increases did not show up for more than a year after injection started.

The average daily oil production for the 220 wells of the cooperating operators was 2043 barrels for July, 1941. The decline curves indicate the anticipated production for July, 1941, to be 1664 barrels, indicating there was a daily gain of 379 barrels for this month. It is expected that the increase over the normal production will improve as the gas volume injection approaches the produced gas volume. The increase in ultimate recovery apparent now for these 220 wells from the repressuring operations is estimated to exceed 800,000 barrels of oil.

Conclusions

A cooperative repressuring project can be successfully carried out even though there are small leases and many operators in a field.

Mainly because of the lack of reservoir energy, and the large quantity of oil remaining in the sand, good results are shown and anticipated from the repressuring.

Full utilization of the original power available is being made; none of the operators have required additional power equipment to drive the compressors.

As periodic gas/oil ratio tests have been made and the injection volumes closely correlated with oil and gas production, none of the wells are in serious condition because of by-passing or channeling.

The injection volumes required to show results are less than the produced gas volumes, although it is anticipated that more than the present produced gas volume will need be injected to obtain best results.

On all repressured leases the oil production decline has been retarded. Some leases have shown a flattening of oil production decline, and other leases have shown an increase in oil production in the past few months.

The increase in ultimate recovery due to repressuring of the 220 wells in the cooperative area is estimated to exceed 800,000 barrels, or 3640 barrels per well.

REFERENCES

[1] L. L. Brindred, "More Recovery by Use of Gas and Air." A.I.M. & M.E. Paper.

[2] C. E. Beecher and I. P. Parkhurst, "Effect of Dissolved Gas Upon Viscosity and Surface Tension." A.I.M. & M.E. Paper.

Out of sight of shore on the welding barge, 11 miles from the terminals, this drag of pipe is being brought aboard the barge to be joined to the section already laid and aligned in the positioning fixtures on the barge deck. The newly arrived end is protected by a compression-type coupling and blank end to insure dry pipe for the junction weld.

25-Mile Under-Water Span in Seafaring Pipe Line

By ELTON STERRETT, Staff Writer

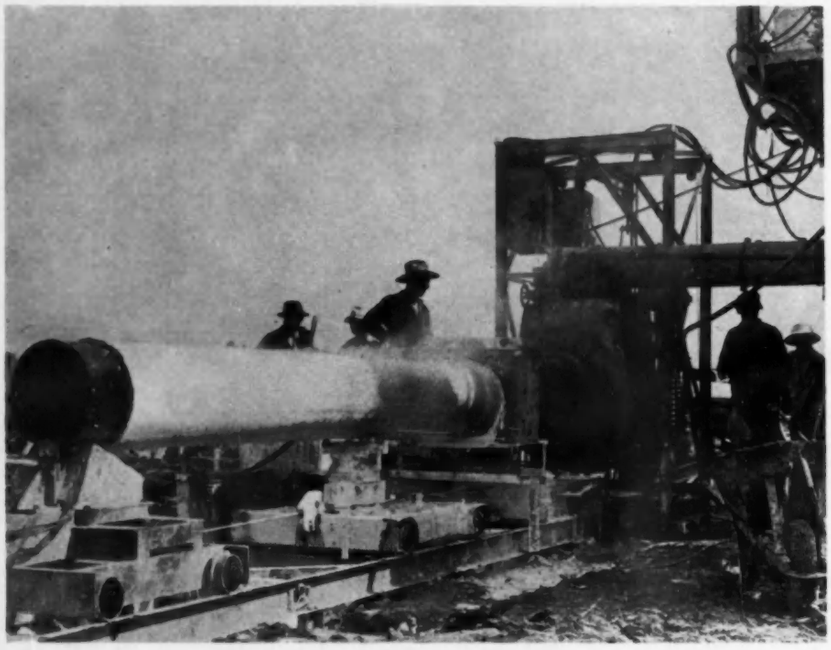
PIPELINING goes to sea. After various "big-inch" lines had pioneered through swamps, over mountains, and across deserts, with frequent difficult river crossings thrown in for good measure, it was left to United Gas Pipe Line Company, planning a line across the middle of Lake Pontchartrain, to undertake the longest under-water line on record, and for the first time to carry on operations out of sight of land at either end of the tie-in.

Lake Pontchartrain is a large, shallow body of water lying generally north of New Orleans, and extending eastward through a pair of short and quite narrow channels to a connection with Lake Borgne, itself a salt-water bay off the Gulf of Mexico. In theory kept fresh by streams emptying into the upper end of the lake and along its northern shore, its normal trace of salinity is increased to a point where corrosion is rapidly accelerated whenever a long blow of east wind continues and waters of the Gulf are driven into the lake and its normal level thereby raised as much as three feet.

At the point where United Gas Pipe Line Company is laying its crossing the lake measures more than 25 land miles. For once, a pipe-line course had to be laid out under conditions more nearly approximating marine navigation than land surveying without benefit of stations, backsights or chains.

A compass course, determined from a line drawn across a map, served to direct the surveying party. Working from small boats the party set out 24-foot 2 x 4's for general direction. After this was done bamboo poles were set in the intervals between these sections. An attempt to use buoys failed because strong currents in the lake during the storms carried them off the line. The 2 x 4's are 20 to 28 feet long and are sunk by hand into the heavy mud that forms the lake bed. All markers carry white flags to assist in sighting them. The bamboo poles offer but little resistance to wind and wave and consequently hold their positions very well. They are weighted on the lower end by cement.

Taking off from a point in the marshes fringing the southwestern shore of the lake, almost due north-



The dual-purpose coating, applied hot over priming and bonding coat, provides corrosion protection to submerged line, at the same time adding 26 pounds weight per foot and giving approximately 20 pounds negative buoyancy per foot, eliminating need for river clamps or other weighting to hold pipe on bottom.

Welded pairs of mill doubles, originally set up for barge welding, now go into fabrication of drag alongside similar unit now occupying launching canal. Drag is lowered into ditch after being welded to lengths of 1000 to 3500 feet, depending upon water conditions in lake at launching time.

east of the Mississippi river crossing at St. Rose, the course was charted for a point approximately one half-mile east of Mandeville on the north shore.

Original plans called for the welding together on shore of two 50-foot sections of pipe and loading these on barges. These barges were towed out to the derrick barges where they were lifted one by one to an inclined ramp on the welding barge and welded to the section of pipe already in the water. High winds and rough water made control of the approximately 100-foot section of pipe difficult and the plan was revised to call for barge welding of sections approximately 2000 feet in length which are welded on shore and dragged by tug to the barges. In making these welds the weight of the drag and the elevated end of the already laid section tended to equalize buoyancy across the barge and counteract possibility of sudden shifts of the welding barge.

The barge on which the actual mid-lake welding is performed carries two pairs of supports, each pair being used to retain and align one section end. The supporting yokes are padded to avoid crushing the protective coating, and the central pair also carry lugs into which the tightening members of their upper halves fit. The two pipe lines simply rest in the open yokes of the outer supports, but are held rigidly in the pair abutting the junction. The end of the completed section is set in place first, and the free end of the drag then brought aboard in the outer support and gradually worked forward with winch line and jack until the space between the ends has been closed to the specified welding gap. The customary alignment clamp is applied, the tack welds being made longer than practice on shore work to provide greater resistance to the torsional stresses set up in the two abutting ends of pipe by wave action against the welding barge.

When weather conditions make welding operations impracticable, even between the relatively stable drag and laid line, the working end of the pipe — always kept capped except during the actual making of a weld—is buoyed and lowered to the bottom, the barge being towed to the lee shore for safety.

Shore Operations

The 14-inch seamless pipe, with ½-inch walls and weighing 72.09 pounds per foot, is received at

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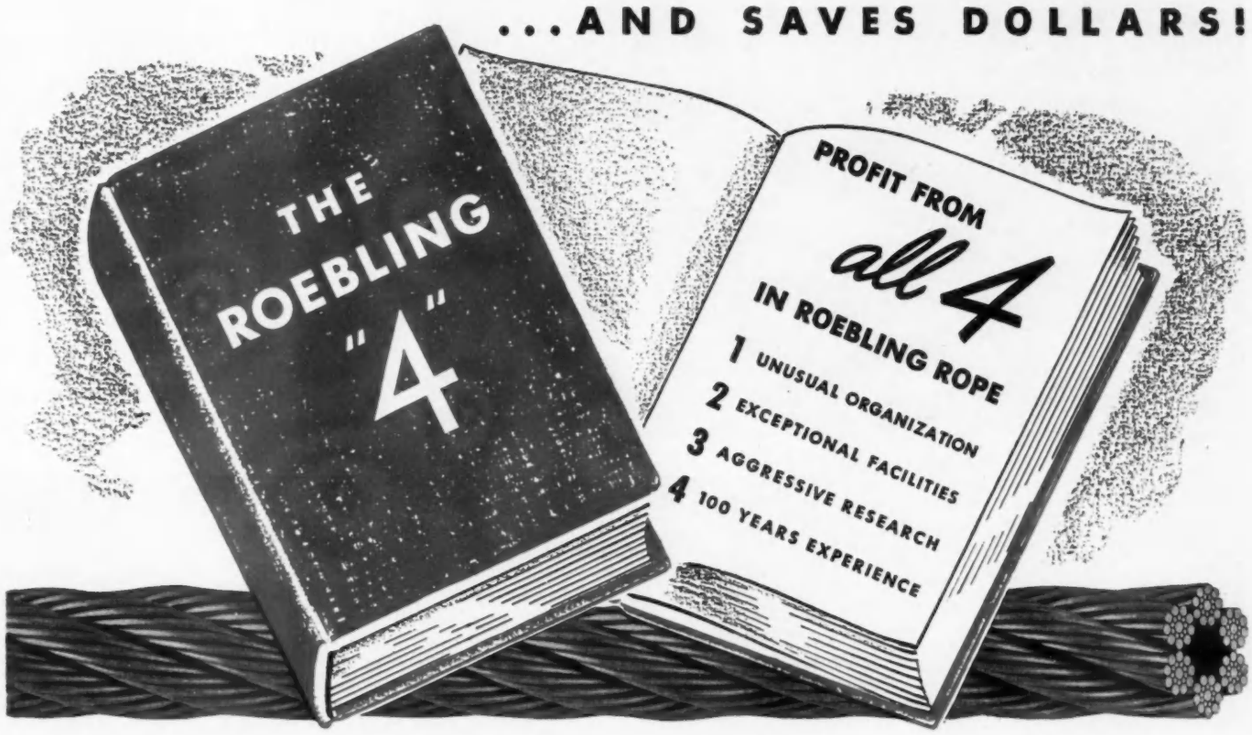

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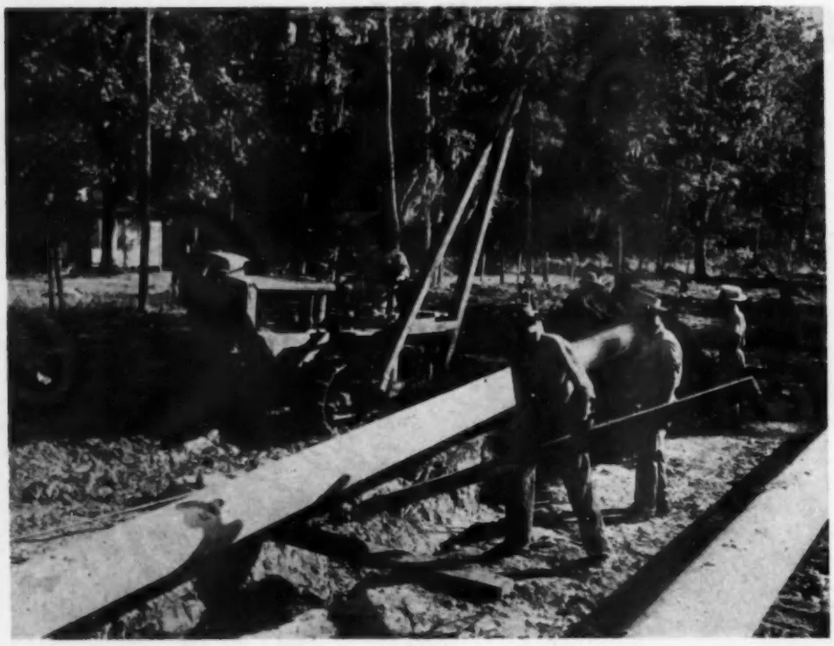

Two tractors provide motive power to shove drags through canal, the rearward tractor carrying the end of the pipe in a broad sling and pulling through short winch line to traction cap lug. A second tractor, farther down the line, attaches winch line to second lug and equalizes strain through winch drive.

Pontoons of tandem steel drums, used to support pipe for the long trip across the lake. The carrying straps are shod with sections of old automobile tires to reduce chafing on pipe coating.

Mandeville for the northern half of the lake crossing, and comes in as mill-fabricated doubles in random lengths of about 50 feet, ends already scarfed for welding with the prescribed bevel and run.

From the incoming storage racks the pipe is handled as soon as possible through a steel grit blasting machine, preheated, and prime coated. This sequence of operations removes any mill scale still adhering to the pipe, scours away the thin coating of iron oxide appearing on the surface after exposure to weather during the rail trip from mill to yard, and the bonding agent affords protection against further rusting pending the final yard treatment.

After cooling and setting of the prime coat, applied under air pressure as the pipe spirals slowly through the machine, the line is rolled across a long curing and storage rack to the feed rolls of the machine where the heavy main protective coating is applied. This material, built up on heated pipe while itself in a plastic condition due to heat, is applied to a thickness of between 9/16- and 5/8-inch, evenly distributed under pressure around the circumference of the pipe wall and adding slightly in excess of 26 pounds to the weight per foot of the pipe.

With an outside diameter across the coating of approximately 15.2 inches, the coated pipe then weighs 98 pounds per foot or slightly more. This figure is computed by the engineers to give a negative buoyancy or weighting effect of about 20 pounds per running foot of line as laid on the bed of the lake. Through the use of the heavy coating the dual purpose of pipe protection and pipe weighting is secured, it being considered unnecessary to employ any type of river weight in addition to the loading secured from the corrosion-resistant material and the depth to which the pipe will work itself into the lake mud. As the pipe emerges from the coating machine it is sprayed with whitewash, making it easier to handle.

From the welding and storage yard, pipe is brought by "cats" in four-length sections to the launching or drag ditch which runs directly inland from the shore line. This ditch has been dredged to allow a minimum of two feet of water in the trench and is capable of being closed at the lake end with a temporary dike which tends to prevent too much water entering from the lake during in-shore winds and storms.

The drag, in length from 1500 up to as high as 3900 feet which has already been successfully handled across the lake, is built up by modified stovepipe welding methods and either supported over the launching ditch on frequent trestles, or laid alongside it if the ditch is already occupied with a drag ready to go out. At launching time the elevated shoreward end of the drag is slung beneath two pontoons by

PREFORMED COSTS MORE
...BUT IT'S WORTH IT

WICKWIRE ROPE

The ability of Preformed Wire Rope to longer resist destruction from bending than regular lay rope, would in itself justify the use of Preformed for National Defense. And speed too, is also a great advantage. Because it lives longer, a Preformed Rope causes less frequent tie-ups of equipment for rope replacement. Because it does not require seizing and has less tendency to kink, installation is much faster. Specify WISSCOLAY Preformed the next time you order rope. It has the characteristic longevity of all Wickwire Ropes plus the virtues of preforming.

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the boom of the crane located at the shore line, while two tractors are tied to the rear end which has been plugged to prevent the entry of water.

The rearmost tractor supports the end section in a broad belting sling to insure the end being kept clear, and applies traction through its winch line to one of the opposed lugs on the towing cap. A winch line from a second tractor is attached to the other lug, tension on the two lines being equalized by the winches as the two tractors traverse the excessively rough terrain between inner end of ditch and the waterfront.

The tractors push the pipe as far as possible out into the lake. The end of the pipe is then slung beneath two more pontoons and a tug which has been augmenting the pushing of the two tractors by pulling on the front end of the pipe, starts towing the drag out to the welding barges.

Welding Practice

The 50-foot sections as received from the coating yard are aligned on blocks to allow working all around the pipe, abutting ends of two lengths being aligned with the usual cam-tightened welding clamp before tacking. Two welders normally work on a junction simultaneously, one on either side of the pipe, and spacing their efforts so that metal beads are being applied as closely as possible at two spots 180 degrees apart around the joint.

Arc welding is used, there being a stringer, three beads, strippers, and finish. Each bead is inspected, scaled and checked before the next is run. By dividing the welding and alternating sides on which the welders work, fatigue resulting from prolonged work in one position is avoided, and the beads are run faster and with greater precision.

When making welds in the center of a paired double, usual grounding practice for the welding circuit is to insert the ground electrode inside the open end of the pipe, blocking or wedging it there to insure adequate contact. When the distance to the end of the line exceeds 100 feet, however, the ground is frequently tacked at the edge of the coating on the welder's side of the joint, the initial circuit being completed through the tack welds until sufficient metal has been built up to insure adequate cross section to carry the current without excessive resistance. Each weld is given a final inspection after completion.

Four-part form, clamped around the ends of pipe left bare for the welding operation, permits the running of coating material and its subsequent compression to consistency of remainder of coating.

Following checking of the weld, a four-part adjustable joint-coating form is placed around the junction, the outer edges of the form or mold abutting on the portion of coating applied at the pipe yard. Approximately nine inches of the pipe end is left clear at the coating operation to provide space for the alignment clamp and to assure clear metal for the welding ground if desired.

The mold is clamped around the coating with sufficient grip to prevent leakage. Then coating material, brought to the proper temperature in a heated conditioning truck located as closely as possible to the job, is fed into the open hopper until the space between mold and pipe is filled. By taking up on the adjusting screws at the junctions of the four sections of the mold, pressure is applied and the poured material compacted to a degree closely approximating the consistency of the other coating as applied in the yard.

When the material has cooled and set, the mold is removed, and the inside whitewashed to prevent sticking of the next filling of material.

Physical Line Protection

No trenching is being done in the lake bottom, the line being towed into place and allowed to settle under its own weight and any slight washing or burying action of bottom currents. Preliminary investigations of the lake bottom showed a soft silt layer through the first six feet underlying the water, with the consistency gradually becoming stiffer until at some point near that distance below the nominal lake bottom there is sufficient support to carry the loading of around 20 pounds per lineal foot, distributed over the width of the pipe, and thus not applying concentrated loading to any section of the coating or requiring any bridging of the line itself across possible sags or low spots.

The lake has an average depth of 14 to 16 feet at the point where the line is being laid and on completion will be well marked with lighted buoys, one every mile, to prevent accidental damage to the line by clam dredgers or vessels which might drag their anchors over the lines. Use of Lake Pontchartrain as seaward extension of the vast Bonnet Carre spillway which serves to divert part of the Mississippi's flood waters from the main channel is expected to bring occasional additions to the silt making up the bottom of the lake, though much of this flood-borne material will settle out before reaching the traverse of pipe line.

Proof of the rapidity with which the lake mud buries the line was obtained when, due to a threatened tropical hurricane, the barges were ordered from the lake. The end normally carried on the barge for subsequent operations was capped, lowered to the bottom, and site buoyed, then the equipment moved in shore.

The buoys were carried away in the storm, eventually being found at the extreme western end of the lake. The line position could not be traced by any usual pipe locating methods, due to the absence of metallic contact with either shore. Grappling was the only method of recovery available, and it was only after many efforts that a grapnel finally penetrated the silt sufficiently to contact the pipe, enabling a line to be placed around it and the end again brought to the surface for resumption of welding.

United Gas Pipe Line Company and the contractors, Brown & Root, have pioneered in this crossing of Lake Pontchartrain with a 14-inch gas line and have developed methods and improved practices which should save time and reduce outlay on any similar project undertaken by themselves or any other pipe line company. They have demonstrated that vast reaches of open water, while not simply extended river crossings, may be spanned and that the straight line, still the shortest distance between supply and demand, may also be the most economical and efficient, even under conditions which do not at first glance appear to be either economical or feasible.

AND PUMPABLE!

with the retarded set, provides and pumpable for extended temperatures and pressures

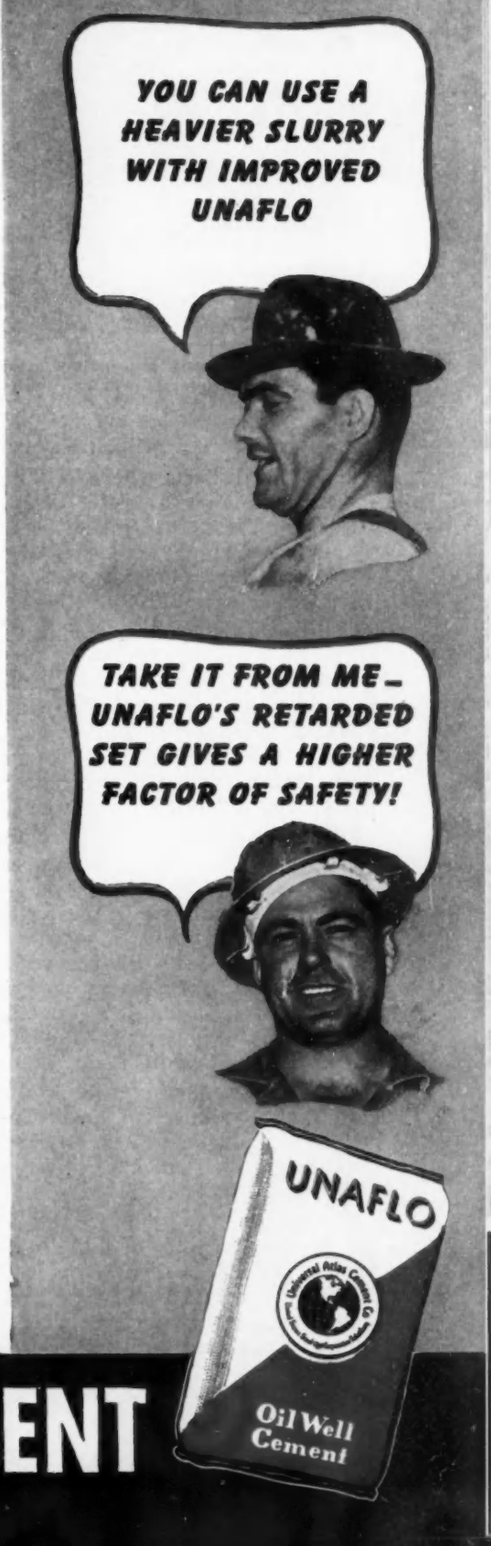
17-lb. slurries. These have several advantages. For example, a heavy Unaflo slurry that remains fluid and pumpable—

1. **Behaves like a good rotary mud in following irregularities of well bore and casing couplings;**
2. **Flushes ahead of it the lighter, rotary mud without breaking the mud seal;**
3. **Does not become contaminated with the mud;**
4. **Produces back of the casing a more continuous body of good cement;**
5. **Results in a stronger, denser, more impervious seal.**

Improved Unaflo Developed by Research

Despite the satisfaction Unaflo *retarded* cement gave upon its introduction, and the 2100% increase in its use since then, Universal Atlas was not satisfied. Its research engineers continued their studies in the laboratory and in the field. The results of this research are your gain. *Improved* Unaflo is even more uniform in composition, more uniform in reaction to different types of mixing waters found in different jobs, and more uniform in retardation of setting time under different hole temperatures and pressures. As a result, *improved* Unaflo provides true cementing economy—greater protection of your investment—increased insurance against loss—higher factor of safety.

Improved Unaflo, the *retarded* cement that remains fluid and pumpable under different hole temperatures and pressures, is handled by representative dealers. Use it for safer, better cementing, including deep, tough jobs. Get it from your dealer. Universal Atlas Cement Company (United States Steel Corporation Subsidiary), Amicable Building, Waco; Oklahoma City; Kansas City; Chicago; Birmingham.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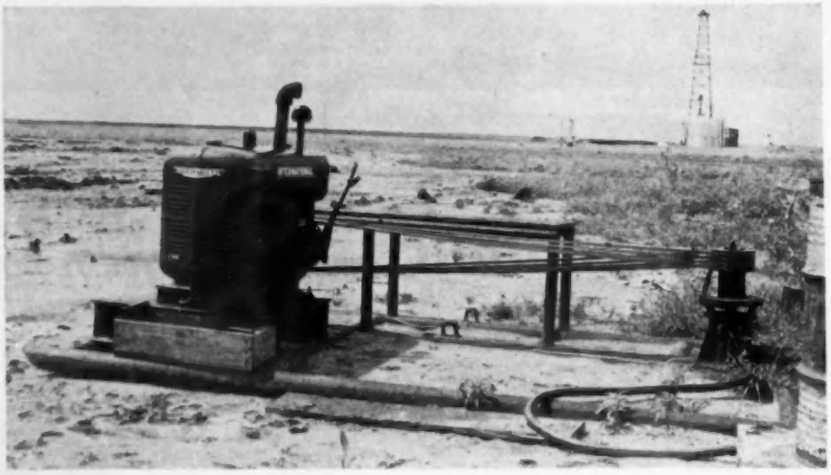
TAKE IT FROM ME— UNAFLO'S RETARDED SET GIVES A HIGHER FACTOR OF SAFETY!
UNAFLO
Oil Well Cement

UNAFLO OIL-WELL CEMENT

Practical Operating Hints for

1. WATER SUPPLY

Unitized Mounting of Drive and Pump Eliminates Need for Fixed Foundations



Heavy pipe frame supports engine and water pump and maintains spacing for belt drive without requiring other foundation or shoring in place.

PROVISION of make-up water supply in districts where locally produced gas is not available in quantities sufficient to justify gas-lift pumping requires the installation of some type of pumping unit at the temporary well.

Richardson Drilling Company, on its work near Sundown, in the Slaughter field, West Texas, uses a unitized pumping hook-up, which is readily transported and which possesses the added rigidity obtainable when all parts are carried on a common base.

The heavy skid base, carrying the engine across two of the transverse members at one end, also supports the bearing and base of the vertically mounted well pump. A quarter-turn drive of vee-belts affords requisite flexibility between prime mover and pump shaft, it not being necessary to provide a tightener for the type of load encountered in lifting water.

To spot the unit over the well head and make connection to the pump shaft is a simple matter, after which the unitized base maintains the initial alignment and minimizes maintenance.

A short length of hose on the pump discharge line provides the flexibility necessary to take care of any variations in angle between outlet of pump and discharge opening.

2. MUD CONTROL

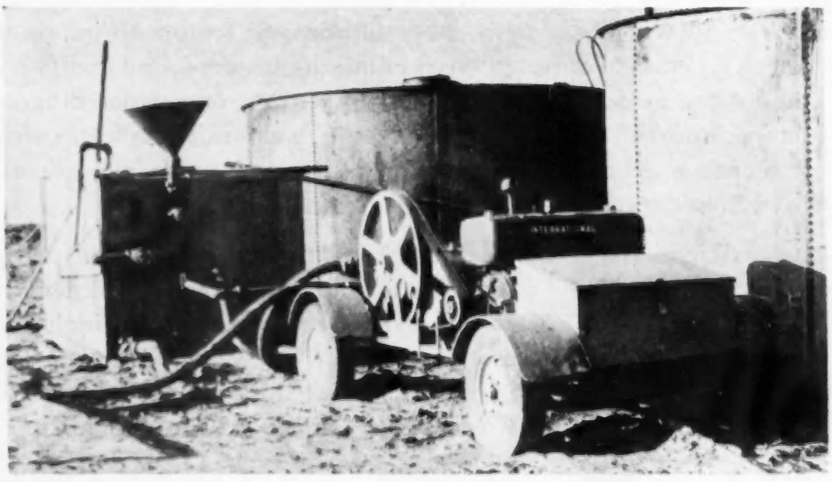
Conditioning Mixer Moves to Drilling Job

IN WEST TEXAS one company using its own tools pays particular attention to the characteristics of the drilling mud. When making a special mix of any type gel, or mixture of gel and starch, or mud conditioned to a saturated solution of salt for penetration of the thick salt beds encountered in that general area, a portable unit is employed which is mounted on a pneumatic tired chassis. A gasoline engine furnishes power to operate the reciprocating pump, and a large square tank contains the mixture, which is recirculated until it reaches the desired specifications.

Unconformity of the terrain and possible vibration of the pump are cared for by tying the intake and discharge connections on the tank to those on the pump with sections of reinforced, high-pressure rubber hose.

The pump is mounted on the chassis of an old automobile, and may be towed behind another car or truck, while the square tempering bin is self-contained, with all piping tied to it by unions set close to the tank, and may be winched onto a truck and readily moved to its next site, without dismantling.

THE practical operating hints for the drilling rig and production man, appearing in these features each week, are secured from oil fields everywhere and offer suggestions that will help to improve field efficiency and safety. The items give an excellent picture of the remarkable ingenuity being exercised by the operating divisions of the industry. Contributions to these features will be paid for at the rate of $5 for each illustrated item accepted. Address contributions to "The Editor, THE OIL WEEKLY, Houston."

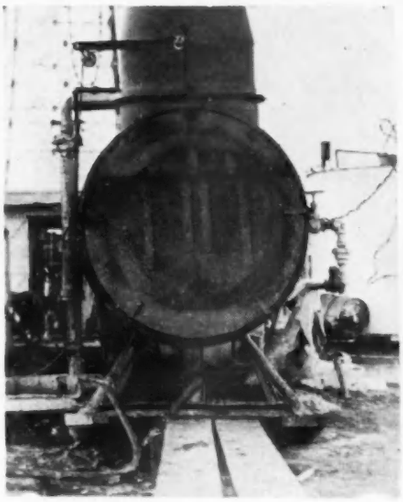


Portable mud-mixing equipment enables accurate conditioning of mud at any well to meet sudden changes in requirements and permits close control.

THE DRILLING RIG . . .

3. BOILER CARE

Hinged Section Aids Smoke Box Work



Hinged and counterweighted door simplifies tube cleaning job.

PULLEYS and weights are used to raise the door over the boiler smoke box on Quintana Petroleum Corporation's rig being operated in the Washburn field, La Salle County, Texas. The set-up consists of two pulleys on a bracket fastened on the stack. A cable connected to the boiler door is run through the two pulleys and connected to a weight which will balance the door. When the latches on the door are loosened the door can be easily raised and will stay in place when fully opened. This enables one man to clean the flues in perfect safety, even when the boiler is hot.

4. PACKING

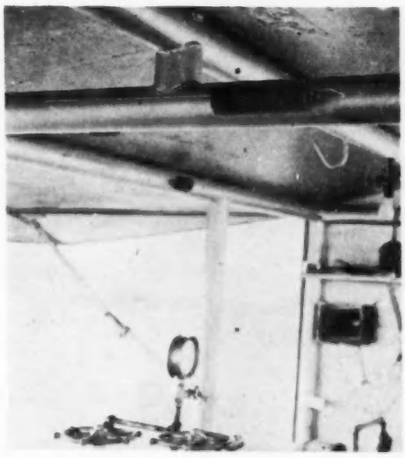
Overhead Storage of Rings Eases Selection

SPLIT ring packing, used on rods of both steam and water ends of boiler-feed pumps, must be kept accessible if repairs are to be made with a minimum of down time.

One Texas Gulf Coast contractor solves the problem of keeping his pump packing handy, clean, and in a spot where the amount on hand is instantly determinable by welding racks to the sides of the four-inch pipe forming the supports of the pump-house roof.

These racks are composed of quarter-inch rods, bent at the ends to give the long section a three-inch offset from the pipe when welded thereto, and thus afford space for the packing without crowding or distorting it.

When a new packing box is received, it is checked for size and type, and then the rings slightly opened and sprung over the rack rod, being retained there by the spring of the packing, which closes the split section and prevents vibration from dislodging the rings.



Welding rod, ends bent and tacked to roof member, becomes packing rack.

Packing a pump is simplified by having these racks directly above the pump, it being necessary only to reach up and free as many rings as needed, taking them singly and springing them into place on the pump rod and maintaining them clean and free of floor dirt until packed.

Should it be considered desirable to keep packing wrapped to prevent drying of impregnated lubricant, it is easy to rewrap the packing, once it is strung up on the rack, and to fold in or tie the ends of the waxed wrapping where it contacts the rods, if simple tucking of the ends is not considered sufficient.

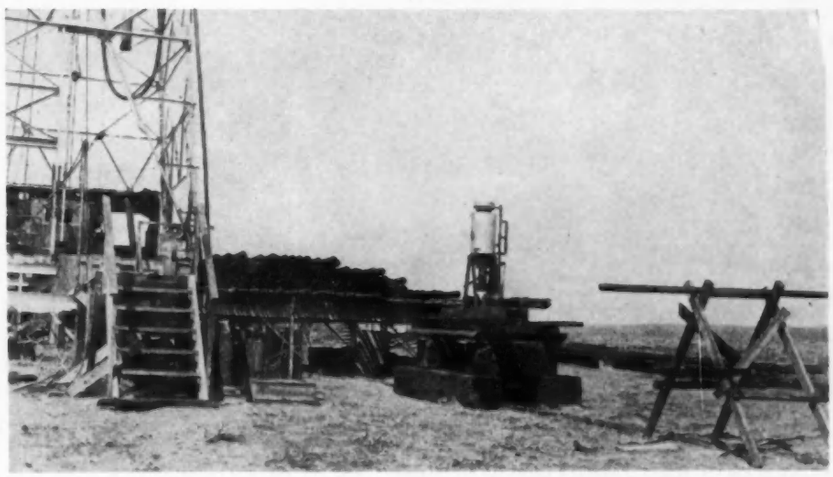
5. PIPE HANDLING

Straight-Line Mount Saves Operation Time

THE use of 2-inch doubles as drill pipe when completing wells in a field with average depth of 4500 feet resulted in the pipe sustaining innumerable bends and "easy" kinks. Just the normal handling of breaking out and laying the pipe down resulted in bends being formed.

To reduce to a minimum the time lost in reconditioning this pipe, the drilling contractor placed the pipe straightener next to the rack, and with its working level even with that of the rack floor. When necessary to remove bends from a double it could be directed into the unit from the floor, and returned to the floor without time lost in the usual carrying from rack to machine and back.

New pipe, being unloaded, can readily be run through the straightener and then racked in a single operation, saving delay later when the pipe is being run into the hole.



Alignment of pipe straightener and backrest with pipe storage rack permit one pass handling of pipe to the job and quick reconditioning.

Only MISSION'S PLUG VALVE Gives You All 4

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2. Easy Operation
3. Trouble-Free Service
4. Safety from Gas Leakage

Leading drilling contractors and major oil companies have proven by actual competitive field tests that in all types of service Mission Plug Valves outwear and outlast other plug valves.

If you want to reduce plug valve problems—and save money—make your next plug valve a Mission.

1. Automatic Lubrication.*
2. Full-Port Lubricant Sealing Grooves.
3. Wedge-Proof cylindrical Super-Surfaced Core.
4. Sealing Grooves on Plug never pass Ports.

1. **AUTOMATIC LUBRICATION**—Provides a constant lubricant seal. Line pressure automatically forces lubricant from reservoirs to sealing grooves. Eliminates necessity of frequent operation of lubricant screw. Ample downstream (sealing end) lubrication. Reduces friction—valve turns easily. Reduces wear and extends life of valve
2. **FULL-PORT SEALING GROOVES**—Sealing grooves encircle ports—assures complete uniform seal. Provides a dependable seal against high pressures, liquid or gas. Full-Port Lubrication thoroughly lubricates core—valve operates easily. Reduces washouts. Reduces wear and extends life of valve
3. **WEDGE-PROOF SUPER-SURFACED CORE**—Cylindrical Core positively cannot wedge—permits easy turning. Perfect fit of core to body conserves lubricant and maintains leakproof seal longer. Lubricant lasts longer...saves time...saves valves. Super-Surfaced core provides extra resistance to abrasives and corrosion agents. Reduces wear—lasts longer
4. **SEALING GROOVES ON CORE**—Never exposed to fluid. Prevent loss of lubricant into fluid line...insures constant seal. Protects sealing grooves on core from direct cutting action of fluid. Lessens intrusion of abrasives into lubricant sealing grooves...reduces wear on vital sealing surfaces. Prolongs life of valve

*When lubricating a Mission Plug Valve, a portion of the lubricant is forced into reservoirs. Thereafter, the line pressure AUTOMATICALLY feeds this stored lubricant, as needed, into the down-stream seal grooves. So long as lubricant remains in the reservoir a perfect seal is assured.

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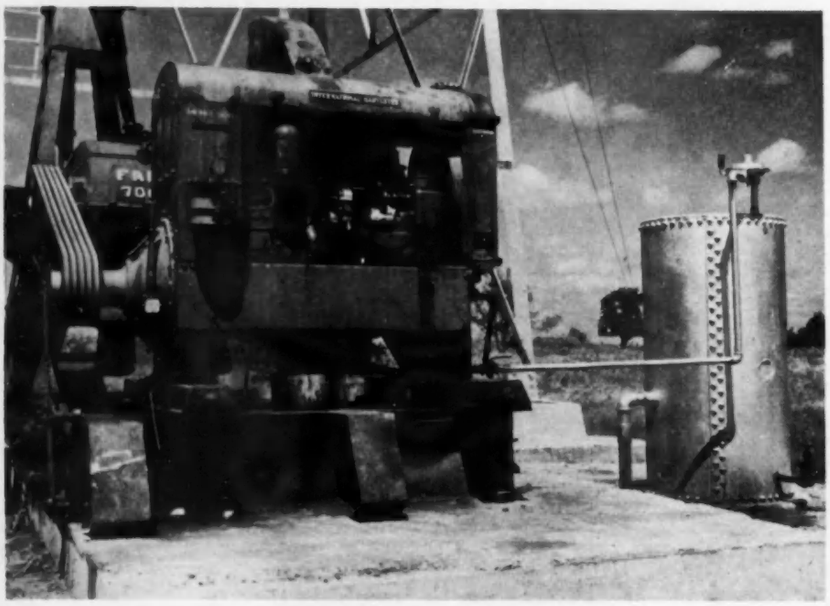
Practical Operating Hints for

1. FUEL SUPPLY

Oversize Tank Conserves Peak Gas Flow for Starting Load and Lean Periods



Storage of gas, for well pumping operations in fields where low pressures prevail, is attained through use of oversize receiving chambers.

THE fuel scrubber tank or receiving chamber commonly used for the pumping engine, and which smooths the flow of fuel gas, usually is constructed from a 4-foot length of 8- or 10-inch casing welded at each end and stood up near the engine. This size ordinarily is satisfactory in most cases, but in fields where a limited volume of gas is obtainable, the flow often is irregular. This makes it advisable to install receiver tanks of a much larger capacity, otherwise the engines would stop when the supply of fuel gets too low.

One company, operating in a field where this condition of a limited supply of fuel existed by reason of the volume of water—as high as 90 to 95 percent cut, uses chambers that are made up from sections of salvaged gas traps, or other steel containers. Since no great pressure is handled, the size, shape, or nature of construction of the chambers is not so important; the essential requirement being to provide sufficient storage so that the fuel supply for the engine can be maintained in order to be able to carry over through the lean periods of lease or well gas production.

By making all tank connections tight and with a check valve on the well gas or input side, an adequate supply of fuel can be held in one of these larger chambers over several hours, making it easier to start the engine and continue pumping after short shut-down or break-down periods. By the time the fuel in the container nears the point of exhaustion, sufficient gas will have been produced from the well to replenish the fuel supply.

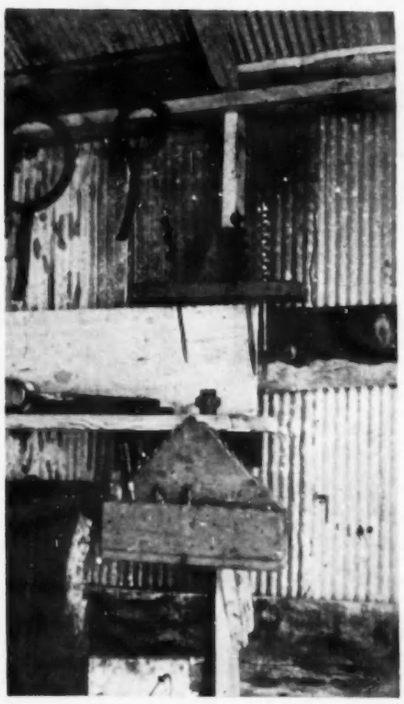
2. TOOL STORAGE

Display Racks Assist in Proper Selection

SMALL tools, used in maintenance and repair operations around the lease, are hard to keep up with, and equally difficult of replacement unless actual wear or breakage can be shown.

For keeping auger bits where they may be readily located, a short piece of pine board is pierced with holes to receive the shanks of the bits and hold the cutting edges upward and out of the way of possible damage. This holder is attached to a second piece of board having a hole in the upper side for slipping over a nail in the tool house or equally convenient short pin of welding rod attached to a derrick leg at the rig.

Small tools, such as pliers, chisels and screw drivers, may be kept in a small box or chest, divided into as many sections as may be required, the unit being attached to a hanger with a high peaked section. This section is bound with corrugated iron to prevent splitting, and is provided with a hole near the top which enables the container to be hung up with or in place of the auger bit holder.



Racks for small tools, affixed to wall, reduce time in selection.

3. SAND LINES

Belt-powered Storage Unit Saves Equipment

EASY spooling and transportation of the sand line is made possible after production equipment has been installed on each new well by the use of a handy spooling device.

A sturdy framework of 10 by 10-inch timbers, bolted together and reinforced by steel plates, tie-bolts,

THE PRODUCTION MAN . . .

Sturdy storage rack provides for maintaining spare sand line.

and turnbuckles, supports the 2-inch pipe axle for the sand line reel. To one end of the axle, a 40-inch flat-belt steel pulley is clamped so that, by merely spotting the assembly at the desired distance away from any power pulley on the well pulling machinery or drawworks, any length belt from any power source may be used to rewind the sand line. No attempt is made to provide good bearing surfaces for the axle, as the relatively infrequent use makes this impractical. Short sections of 3-inch pipe, into which the axle ends are inserted, are the only bearings necessary, aided by the use of a small quantity of hard cup grease. A set of thread protectors from a joint of 2½-inch upset tubing, screwed together, provides a spacer for each side of the reel, preventing it from moving laterally along the axle.

Turnbuckles and tie-rods along the sides of the frame braces take up stresses sustained when power is applied to the driving pulley and prevent vibration damage.

4. REPRESSURING

Input Well Utilized as Reserve Fuel Unit

OFTEN in repressuring operations when the power engine has been down for repairs or there has been interruption to operations over some time, there is not sufficient gas from the producing wells to start the engine.

One South Texas operator solves his fuel shortage by installing a by-pass valve around the check valve controlling back pressures on the key well. This valve may be opened to permit sufficient gas to flow back from the key well to start the power unit.

As soon as sufficient gas is being produced by the wells being pumped, the by-pass is closed and the re-injection of pressure undertaken in the normal routine of lease operation.

The check valve on the input flow line prevents loss of pressure through the key well in the event of line breakage, complete closure of the system being assured by the use of a high-pressure valve in the by-pass and frequent checks to insure its tightness. — *Ty Davison, Wichita Falls, Texas.*

Check and by-pass line tie input well to fuel line for emergency starts.

5. SAFETY

Welded Walkway Spans Pipe Lines

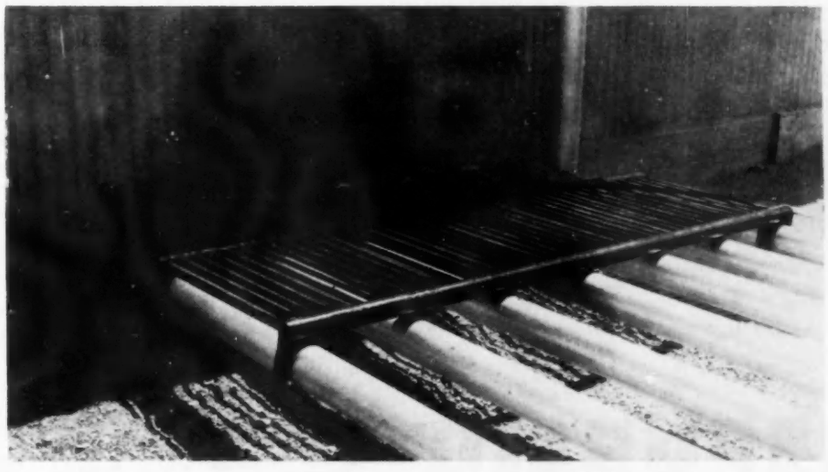
PROVIDING an easy method of crossing a series of closely nested, low-lying pipes is a problem which often occurs in production engineering. In one such case the operator has solved the matter economically and practically by constructing a narrow bridge or walkway directly upon the pipe.

Movement of personnel from one section of the plant to another is made easy, and safety is promoted by eliminating the need for stepping upon or between the parallel lines.

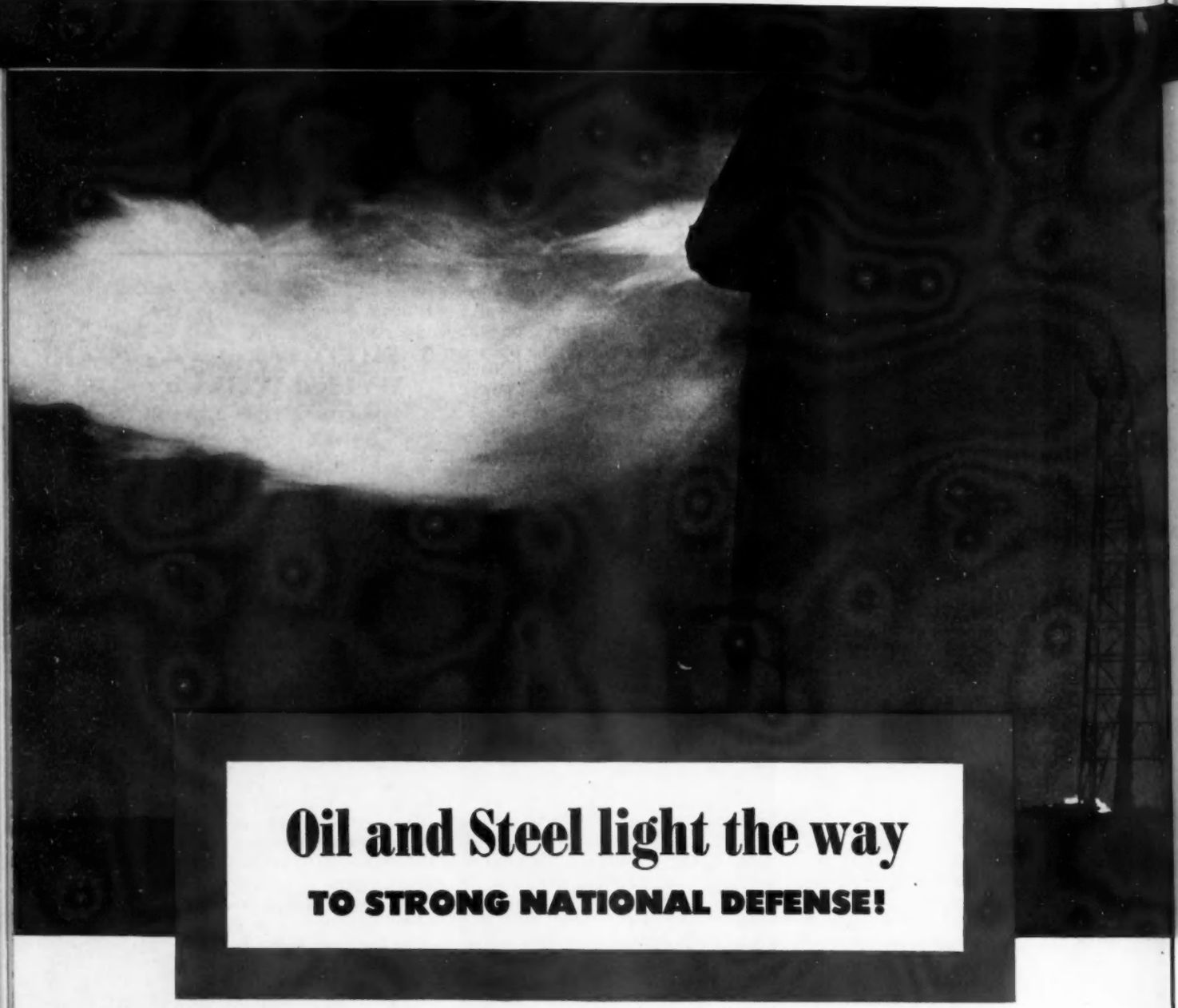
The walkway is welded between two side members of 1¼-inch pipe, with open saddles on each end to slip over the outermost pipe lines and prevent lateral movement. The walkway itself is composed of two-foot lengths of sucker rod, welded between the side members and supported so that even directly over the pipe there is an air space sufficient to maintain even temperature on the walk.

The device may be moved to permit cleaning between the pipe lines.

Where pipes are painted aluminum, or other light color, it is considered advisable to paint the ladder black in the interest of visibility, as well as making the chore of cleaning less frequent and less exacting.



Composed of pipe, short sections of sucker rods, and saddles to maintain unit in place, this cross-over is light, portable and safe.



Oil and Steel light the way

TO STRONG NATIONAL DEFENSE!

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Republic—world's largest manufacturer of electric weld casing, tubing and line pipe—of alloy and stainless steels—and one of the three major producers of all steel products, is breaking all records to supply steel. Republic's 68,000 men are working day and night in 65 plants and mines to speed National Defense—to aid the petroleum industry in the task confronting it.

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PRESIDENT

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LINE PIPE . . . NORMALIZED CASING AND TUBING

HIGHLIGHTS IN THE WEEK'S NEWS

Compact

Allen Tells Compact Steel Will Be Available

Those attending the Interstate Oil Compact Commission meeting in Fort Worth last week got some small assurances: from Production Director Robert Allen came the assurance that there would be steel available; from Bureau of Mines economist Dr. A. G. White, came the assurance that there would be an increasing demand for the oil they produce.

However, there was no assurance that the steel supply would be adequate nor that the oil needed would bring a better price. That was what the largest crowd of important executives ever to attend a compact meeting had hoped to hear.

In a general committee meeting prior to the general session, three resolutions had been presented for consideration. One urged that sufficient steel be guaranteed to enable oil men to make the defense effort required of them; a second sought an increase in the price of crude; the third called upon the President to assure the industry that federal control is not permanant, that it will be abandoned when the emergency is over.

Only one of these resolutions, the last, reached the floor of the general session; it was presented by Warwick Downing, representing Colorado, but not in the compact committee report; Chairman A. F. Schoeppel of the Kansas Corporation Commission made that clear.

The statement of policy which the committee offered was referred to the executive committee of the Compact. It read as follows:

"The Interstate Oil Compact Commission recognizes the necessity of a continued program of conservation and recommends that renewed efforts be made by the industry and the regulatory bodies of the various oil-producing states during the present emergency. The commission recognizes that an aggressive program of development in the search for new oil and gas reserves is necessary to augment the present known reserves so that the extraordinary demand being made by national defense can be adequately taken care of.

"In order that this might be accomplished it is imperative that no undue restrictions be imposed on the industry by governmental authorities. In this connection it is most important that the present threatened shortage of equipment and supplies be eliminated by issuance of favorable priority ratings on such equipment. No restrictions or burdens, economic or otherwise, should be imposed on the industry at this time which would cause the premature abandonment of small stripper wells and the consequent loss of these reserves. The commission urges close cooperation between the industry and and all governmental agencies toward the end that the extraordinary demands by the present emergency shall be adequately met.

"The commission urges the authorities in the various oil-producing states to continue their efforts in enacting adequate conservation legislation. The excellent work of the legal committee of this commission along these lines is available to the states in the preparation of such legislation.

"The commission recommends that a 'fact finding committee' to be composed of technical representatives of the various regulatory bodies of the oil-producing states which are members of this commission be provided for by the compact commission, and that this committee use every available source of information so that pertinent data and facts might be assembled periodically from which reports might be compiled for the benefit of the commission and the oil-producing states. In order to compile, coordinate and disseminate this data, it is recommended that the staff of the commission be expanded by the employment of the necessary personnel."

At legislative sessions this year, member states have appropriated a total of $75,000 annually for the support of the compact.

Eleven states were represented at the meeting, including Arkansas, Colorado, Illinois, Kansas, Louisiana, Michigan, New Mexico, New York, Oklahoma, Pennsylvania and Texas. These states were members. In addition, representatives from Mississippi, Nebraska and Wyoming attended as observers.

Governor Coke Stevenson of Texas welcomed the delegation. Governor Leon Phillips of Oklahoma was unable to attend. He is compact chairman, and the absence of his leadership was apparent.

Speaking on "Steel Priorities," Robert E. Allen, Director of Production for the Office of the Petroleum Coordinator, reminded oil men that six weeks ago he had told them that they could not expect the continuation of "business as usual," because of the demand for defense materials.

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Associations

A.P.I. San Francisco Program Calls for Busy Session

The twenty-second annual meeting of the American Petroleum Institute will be held November 3-7 in the Palace and St. Francis Hotels at San Francisco, with an unusually full program of general sessions, group sessions, committee meetings and entertainment.

Announcement has been made that Petroleum Coordinator Harold L. Ickes; Senator Tom Connally of Texas, chairman of the Senate foreign relations committee; and Vice President W. R. Boyd, Jr., of the Institute will address the first general session Wednesday afternoon, November 5.

Speakers at the second general session, Thursday afternoon, November 6, will be Ralph K. Davies, deputy petroleum coordinator; Alfred P. Haake, managing director, National Association of Furniture Manufacturers; and Commander T. G. Galbraith, Royal Navy, British Supply Council, member of Parliament from Glasgow.

Preliminary program provides for group sessions starting Tuesday, November 4, on fire protection and automotive transportation. Group sessions on Wednesday will consider production technology and properties of petroleum. On Thursday the corrosion of gasoline pipe lines, refining procedure and other subjects will be discussed.

Meetings will be held in both hotels. All Division of Refining group sessions are scheduled for the St. Francis, and all Division of Production group sessions for the Palace where Division of Production headquarters also will be located. Registration desks will be operated in both hotels as will information desks.

The annual reception and dinner of the 25-Year Club will be held in the Italian and Colonial Ball Rooms of the St. Francis, Wednesday night, and the Institute's annual dinner will be served in the Palm Court of the Palace on Thursday night. The Entertainment Committee has arranged for a continuous program of tours, cruises, and other events for families of oil men visiting San Francisco, and has so arranged the schedule that the oil men themselves will be able to visit points of interest and attend various affairs between sessions of the annual meeting.

During the entire meeting, the Second Petroleum Industry Photographic Salon (pictorial) will be on exhibit in the Concert Room of the Palace Hotel.

The Institute's board of directors will meet daily from Tuesday through Thursday in the Borgia Room of the St. Francis Hotel to transact business which includes the election of a president to succeed the late Axtell J. Byles, of seven officers whose terms expire this year, and of eight members of the board itself.

The Board of Councillors is to con-

vene Wednesday morning in the Colonial Ball Room of the St. Francis to nominate 47 members of the board of directors whose terms expire this year. On Friday the members of the Divisions of Production and of Refining will meet to elect 20 members of their respective general committees.

South American Petroleum Institute Is Formed

Under the name of "Instituto Sudamericano del Petroleo" (I.S.A.P.), a permanent organization of the petroleum industry in South America has been formed. General agent is C. R. Vegh Garzon, an engineer, at Montevideo, Uruguay.

The purpose of the organization is:

1. To promote and coordinate the study of petroleum exploration, development, transportation, and marketing.

2. To promote the exchange of information by means of permanent publications, booklets for exchange of opinions, establishment of specialized libraries, exchange of scientific films, lectures, etc., and to promote the realization of South American petroleum conventions.

3. To promote and support intensification of commercial intercourse between South American countries in connection with petroleum.

4. To promote the study and adoption of South American technical standards for the petroleum industry, of specifications covering allied products, and of testing methods.

5. To act as intermediary in providing experts in the different branches of the petroleum industry, to the government and companies needing them.

The Institute proposes to fulfill its purposes by means of periodical meetings of its members, through publication of studies and documents, a periodical official bulletin, and establishment of a central information, investigation and coordination service.

Both corporation and individuals may become members of the organization. National sections are to be established in each South American country having 20 members.

Engineers Club of Oklahoma University Inaugurate Lectures

The Petroleum Engineers Club of the University of Oklahoma, student associate of AIME, is sponsoring a series of petroleum engineering conferences honoring O. U. graduates who have distinguished themselves in petroleum and allied fields. The first lecture, to which the public is invited, will be held October 14 and 15, at Norman, and is on the subject of cementing and acidizing. Lectures will be given by W. D. Owsley, supervisor of mechanical research and development for Halliburton Oil Well Cementing Company, and J. H. Adkison, district manager at Midland, Texas, for Dowell Incorporated, who will be assisted by Phil Lehnhart, engineer for Dowell at Midland. Other conferences will be announced later.

Mississippi Line Planned

It is reported that Sohio Pipe Line Company will lay an oil line soon from the Tinsley Dome, Yazoo County, Mississippi, to Memphis, Tennessee, where it will link with an existing terminal.

Compact

[*Continued from page 49*]

"There has been no change from this yet," Allen declared. "The Germans have moved into Russia still further, and the President has ordered our warships to shoot.

"However, the people in charge of defense have now become impressed with the importance of oil. More steel has become available as a result. This steel is the key to the war. In 1941 the United States will produce 88,000,000 tons, of which 65,000,000 tons will go into finished products.

"More and more steel is going into defense, and the OPM must handle the remainder. While I am not representing OPM, I believe it realizes this need for steel in the oil industry. With the steel it gets, the oil industry is expected to produce 4,000,000 barrels of oil daily. In 1931 it produced 2,200,000 barrels per day.

"I have been asked whether we could produce, refine and transport 5,000,000 barrels daily; what would we need to do this, how long could the industry continue at that rate?

"The East Coast people are sold on the oil industry. It has been boasting of its productive capacity, but has failed to add—if we get the equipment. That is our problem now, to get the equipment.

"Our first duty is to keep full the tanks of the British and the Russians, then the stocks from which those supplies must come, and third to provide for domestic consumption. We cannot tell where the oil will be needed for the battles to be fought next year. We must have supplies everywhere.

"To be ready the industry must constantly increase its production and deliveries of petroleum. It needs to increase the discovery rate first; the company that fails to do this is headed out of the oil business. Exploration is at the top of the priority list.

"Second, we must continue to drill 30,000 wells every year. These are needed to sustain the supply, or oil to civilians must be decreased. Britain now allows her civilians only 32 percent of the gasoline normally consumed.

"Oil field equipment may now be included within the defense-supplies rating plan. Then we will get steel in proportion to your requirements last year. You must join in the program to conserve steel and put it to the most efficient use.

"New wells must add more production than any wells drilled before. We must make the best deal we can in trading steel for oil.

"The average producer is having trouble getting supplies now. Some orders delivered now were entered a year ago. The producer who could not foresee his needs and did not order would have difficulty getting delivery in 60 or 90 days if he had an A-1-A rating on his order. This rating is applied only to emergency cases where a well is blowing out, or in some similar instance.

"OPM has only 30,000 or 40,000 tons of steel monthly to allocate for these emergency requirements. Orders must be placed early. You should counsel with your state regulatory bodies to plan the most efficient use of the steel which becomes available. You are faced with a lot of red tape that is unavoidable, but I feel sure that the oil industry will do the job expected of it and not let the United States down."

E. DeGolyer, director of conservation for the Office of the Petroleum Coordinator, said that much of his work had been done while he was chairman of the engineering committee of the Interstate Oil compact, and that he was now attempting to eliminate the prime sources of waste.

First was the waste of oil-field gas burned in flares and second was underground waste. About the only thing that can be done about the first trouble is to reduce gas-oil ratios to a minimum. No fiat of federal or state government, DeGolyer said, would solve the problem. It needs individual consideration in each field. To this end he urged each state regulatory body to study each field with the view to arresting pressure decline and using all other conservation methods to insure the highest ultimate recovery.

DeGolyer pointed out that the pace of discovery is not keeping up with the depletion of reserves. Despite conservation practices such as the Railroad Commission of Texas has maintained in the East Texas field, reserves are being depleted more rapidly than new fields are brought in. He credited the error in estimates to the practices of adding to newly discovered reserves each year the higher estimates of recoverable reserves from fields already producing. Thus the API estimate of an increase of six billion barrels in reserves discovered since 1935 probably includes four billion barrels of oil that will be recovered from fields discovered already, but which were not adequately estimated originally. Thus exploration must advance if sufficient oil is to become available.

White Urges Intensive Operation

There is no such thing as "normal" now, declared Dr. A. G. White, petroleum economist for the United States Bureau of Mines. For that reason, forecasting demand has become a most difficult business. Despite abnormal conditions, White said that the bureau has been able to predict demand for the first three quarters of 1941 within 1.5 percent of perfection.

Because conditions are not normal, White sees the need for continued production and refining at current rates throughout the winter. In this manner alone is it possible to assure an adequate supply of crude and refined products during the spring and summer of 1942. There is no danger, in his opinion, that resulting increases in storage this winter will prove other than beneficial when the high consuming season arrives.

For November, White anticipates a demand of 4,070,000 barrels daily for domestic uses. This is 465,000 barrels, or 13 percent, higher than last year.

Current and future increases in demand must be met by new production, White said. More stocks are needed, and no seasonal decline is expected during the winter. Thus the demand for crude during the winter will continue to be from 4,050,000 to 4,100,000 barrels daily.

Improvement in transportation of oils to the East Coast has proven helpful already. Because peak operations are expected east of the Rocky Mountains during 1942, the actual demand is difficult to estimate. During the third quarter of 1941 runs to stills will average 3,980,000 barrels daily with production at 4,040,000 barrels. In the fourth quarter runs to stills will increase to 4,000,000 barrels daily with production up 4,050,000 barrels. These are minimum rather than maximum estimates, White said.

On August 1, 1941, stocks of all oils totaled 545,000,000 barrels, 31,000,000 bar-

rels less than a year ago. A storage decline of some 38/40,000,000 barrels more may be expected this year.

There has been an increase of less than 4 percent in production this year, while the domestic demand has increased about 13 percent. An overall increase of 9 percent has resulted in the combined domestic and export demands; export demand dropped about 33 percent, or 40,000,000 barrels. The total demand for 1941 will be 1,175,000,000 barrels as compared with a demand for 1,164,000,000 barrels for domestic uses.

Production this year is up about 54,000,000 barrels, while imports are about the same as they were in 1940. Production last year added 39,000,000 barrels to storage, but all that storage was used in 1941, and it was further reduced by 28,000,000 barrels, making a total difference of 67,000,000 barrels.

No further increase in the transportation shortage is anticipated. Imports and exports for the year will probably balance and the increase in domestic demand must come from new production in November and thereafter.

During the first quarter of 1941 the total demand was up 4 percent, as domestic demand rose 8 percent. During the second quarter the total demand was up 8 percent with the domestic demand rising 13 percent and export demand declining. During the third quarter the total demand rose 13 percent (over 1940), with the domestic demand up 18 percent. Some of this domestic increase was caused by advance purchases, and may be considered of an inflationary nature. During the fourth quarter increasing defense activity indicates a reduction in the "business as usual" program, and it seems likely that the domestic demand will be about 12 percent higher than for the same period last year with a decline in exports and an increase of 9 to 10 percent in the demand for all oils. This demand will probably extend into 1941.

Termination of shipments to Japan has reduced exports from the West Coast and some adjustments must be made there. Substantial increases in exports east of California are anticipated.

Since the liquidation of stocks in the Midwest refining area has taken place, supplies for refining units in this area must come from new production. This means that Texas, which has the surplus production actually available, will be called upon to supply the demand.

Radical changes in the method of forecasting have been made by the Bureau of Mines this year, White said. He pointed out that under the Lease-Lend agreements it was no longer necessary to record all oils exported, and it appears that some of these shipments may now be included in the domestic demand figures, causing them to swell.

The demand for motor fuel in 1941 will be about 683,000,000 barrels, or 68,000,000 barrels higher than the 1940 figure. The 1941 crude demand will be 1,419,000,000 barrels, up 7 percent or 90,000,000 barrels over 1940. As production rose, 3 to 4 percent of the increased demand came from storage, and the market demand estimates include withdrawals from stocks as well as new production.

During the first 8 months of 1941 907,000,000 barrels of crude was produced, and 15,000,000 barrels was withdrawn from stocks. This meant a total demand of 922,000,000 barrels. Of this, 755,000,000 barrels was produced and 13,000,000 barrels was withdrawn from stocks east of the Rocky Mountains, a total of 768,000,000 barrels, which represented the total demand. Texas produced 328,000,000 barrels and withdrew less than 1,000,000 barrels from stocks during this period. The Bureau of Mines estimate was 1,500,000 barrels less than the actual demand for the first 8 months of the year, White said.

Oklahoma, during that time, produced 103,000,000 barrels and 9,000,000 barrels were withdrawn from stocks, showing a total demand of 112,000,000 barrels, while a demand of 111,000,000 barrels was forecast.

Total stocks of gasoline on hand on the East Coast on September 30, were 77,000,000 barrels; this was 5,000,000 barrels lower than last year. Delieveries to this area for August, 1941, were 4,000,000 barrels higher than for the same month last year. This resulted in part from the increased movement overland, up from 500,000 barrels in August, 1940, to 2,000,000 barrels this year. Because of improved shipping conditions, the East Coast situation is nowhere near as bad as it might have been, White said. However, an unusually cold winter season could cause a vast increase in demand.

Demand may go up 6 or 7 percent next year, but on the other hand there may be no increase. It could increase as much as 10 or 12 percent. The curtailment of the "business as usual" program, may offset defense demand to some extent. In 1940 naval consumption was 16,000,000 barrels; figures for 1941 are not available, but this demand may rise 2,000,000 barrels monthly during 1942.

Buttram Would Encourage Wildcats

Frank Buttram, past president of the Independent Petroleum Association of America, declared that the industry should prepare now to furnish the additional oil required, and should step up production to 4,500,000 barrels daily. He urged also that steps be taken to assure wildcatting that would furnish the necessary additional reserves.

Warwick Downing, representing Colorado, offered a resolution commending President Roosevelt on his apopintment of Harold L. Ickes as oil coordinator. However, the resolution also called on Ickes to state publicly the duties of the office as he understood it, that he was a "coordinator," not an "administrator," and that the office of coordinator would be abolished when the defense effort terminates. This resolution was sent to the executive committee.

Downing also urged the compact to seek a higher price for crude as a means of conserving stripper-well production and assuring a price that would justify active exploration to obtain new reserves. He pointed out that the compact favors the curtailment of production as a conservation measure and insisted that the price request was within the scope of the organization's authority.

"The compact," Downing said, "should oppose an unreasonable ceiling on crude prices. An immediate price advance is the most important step that can be taken. A fair price means better production practices; it is needed to sustain the stripper wells and to offset development costs. To prepare for the war ahead, we must double the discovery rate.

"Adding 1 cent per gallon to the cost of gasoline to the consumer would mean adding 30 cents per barrel to the price of crude which would finance this development campaign. This is better than letting the politicians add 1 cent to the gasoline cost in taxes. The cost of production from the poorest marginal wells should govern the price for crude.

"We should urge Secretary Ickes to develop leases of public lands with 1/8 royalty payments. He should clean his own doorstep by opening the public domain. The construction of crude pipe lines to coastal refineries should be discouraged. Let these lines carry gasoline and refine the crude safely at plants in the interior.

"The federal government should not take advantage of the emergency to impose federal control; the large oil companies should not take advantage of the emergency to impose on the independents."

Coordinator's District Office Headquarters in New York

To facilitate conferences between officials of the Petroleum Coordinator's office in Washington and oil company officials, the District 1 (East Coast) personnel of the Washington office will be moved within two weeks to the Chanin Building at 122 East 42 Street, New York. The New York staff will consist of: office manager, W. J. Heison, formerly of the Department of the Interior Fish and Wild Life Bureau at Minneapolis; director of refining, D. W. Wilson, former engineer with M. W. Kellogg Company; director of marketing, L. H. Spiner, formerly of La Clede Gas Company; director of production, J. J. Wylie, formerly with Huntley and Huntley, engineers, of Pittsburgh.

Also to have offices in the Chanin Building are Petroleum Coordinator Ickes' four advisory committees of oil company officials for District I. These committees and their chairmen are: production, W. S. Hallanan of Plymouth Oil Company, Charleston, West Virginia; refining, R. H. Colley, The Atlantic Refining Company, Philadelphia; transportation, W. A. Jones, Cities Service Company, New York; marketing, H. W. Dodge, The Texas Company, New York. John A. Brown, Socony-Vacuum Oil Company, New York, chairman of the general advisory committee for District 1, will also have offices in the building.

North Belridge Operators Agree to Curtail Output

Oil producers with holdings in the North Belridge field in Kern County, California, have approved a temporary curtailment program for the area which will result in reducing output of natural gas by approximately half and a 25 percent reduction in oil output. Companies affected include Belridge Oil Company, Continental Oil Company, Richfield Oil Corporation, Standard Oil Company of California, The Texas Company, Tide Water Associated Oil Company, and Union Oil Company.

Total gas production from the area is expected to be reduced 75,000,000 cubic feet daily while oil output will be cut from a current level of 10,000 barrels daily to around 7500 barrels daily. All wells producing 15,000,000 cubic feet of gas daily or more are to be shut in, it is stated.

The program is to be in effect 30 days, with provision that it may be continued for an additional 60 days thereafter. Some operators in the field are conducting recycling operations whereby natural gas obtained incident to oil production is returned to the formation, while additional recycling facilities are reportedly under construction or contemplated.

Reservoir Problems Have Attention Of Engineers at Dallas Meeting

FEATURING the engineering and laboratory approach to reservoir problems and carrying one forum on reservoir performance, the program of the Petroleum Division of the American Institute of Mining and Metallurgical Engineers fall meeting in Dallas, October 16-18, opened with an address by the president, John R. Suman.

Suman analyzed the former, present and prospective outputs of the key metals in the national defense program, indicating by means of charts the tonnage produced over the period immediately preceding the war, that for 1940, 1941 and (projected) for 1942. Indicated shortages in many of the essential metals forecast serious domestic shortages which may even, in the opinion of the speaker, result in shut-downs of many manufacturing plants and much unemployment in those industries unsuited to conversion for defense production. These hardships, these discomforts, are a part of the sacrifices which the American people will be called upon to bear as part of their contribution to national defense, he declared.

Following a summary of the various metals, in all of which, save aluminum and magnesium, Suman saw a growing preponderance of United States and Allied production over Axis output, a brief survey of world petroleum was taken, in which the 1942 forecast was estimated at 7½ percent over 1941, as against a figure of 10 percent set forth by the Office of the Petroleum Coordinator.

Following four technical sessions, two each on the first and second days of the meeting, and in which the technical and abstract considerations of the subjects were discussed by the authors, the Saturday morning session on reservoir performance, sponsored by the production engineering committee of the association, presented papers on sub-surface water conditions and featured a summary of replies to a questionnaire sent out to engineers and technologists to determine the agreement upon the fundamental principals of reservoir performance, this being presented in a forum on the subject.

Abstracts of the papers follow:

Productivity Index and Measureable Reservoir Characteristics

By James A. Lewis, William L. Horner and Marion Stekoll
Core Laboratories. Inc.

The productivity index of a well is an engineering term expressing the number of barrels of net oil which may be produced during steady flowing conditions for each pound of pressure differential from reservoir to well bore. It varies directly with permeability and sand thickness, and inversely with formation volume factor and reservoir viscosity. Since the fluid systems are not homogenous, other factors may also affect the rate of flow. The authors correlate measurable factors and measured productivity index, plotting this relation for wells in several fields. A tentative productivity index equation may be used, calculation from which requires better knowledge of the influence of pertinent factors. These may include connate water factors, variations in drainage radius, gas saturation and completion methods.

Agreement between actual data and theoretical conclusions reached is illustrated by example of completed well, the results showing with close check.

When total available pressure differential is known, the relationship between sand thickness, viscosity and formation volume factor may be used to estimate rate of production.

Knowledge of reservoir media and fluid characteristics enable correct prediction of rate of water intake on waterflood projects. Proper injection pressures may be calculated, and the time for a specific recovery foretold. Proper well spacing may be determined. Rates of input and yield determinable from factors mentioned are essential in economic planning of secondary recovery projects.

Extension of the conclusions by additional data and research is needed. especially on reservoirs of varied and known connate water content and for wells of different drainage radii and and for various numbers of perforations per foot. Sub-surface data in partially depleted fields should be obtained. The calculation of productivity index from four or more variables requires a high degree of accuracy in determining the numerical values for each of these variables.

A Laboratory Study of Water Encroachment in Oil-filled Sand Columns

By Frank G. Miller
United States Bureau of Mines

This report covers a series of about 30 laboratory experiments in which a stable oil was recovered by water-drive action from specially prepared oil-filled columns of unconsolidated sand composed of quartz grains having a narrow particle-size range, within usual reservoir limits. Water-encroachment rates in terms of the average oil-water interface velocity within the sand, ranged from 0.06 foot to 7 feet a day.

Attempt was made to have laboratory conditions identical throughout, additional experiments being run to determine the relative influence of permeability on recovery.

The report is presented to cover only a small portion of the research being directed toward the problem, and is not to be applied directly to field operations, but to be used as a contribution toward solution of the general problem of water encroachment.

The author concludes that, because oil-recovery efficiency in fields having effective natural water drive generally is believed to bear an inverse relationship to the rate of water encroachment, under certain idealized laboratory conditions and within a definite range of low water-encroachment rates, the percentage of oil recovered increases with the rate of water encroachment. Likewise, the influence of the rate of water encroachment on oil recovery is more pronounced at lower than at higher rates.

Sampling Gas-Condensate Wells

By J. M. Flaitz,
Union Producing Company, and
A. S. Parks
Consulting Engineer

The apparent solution to the problem of sampling gas-condensate wells is to provide some means of securing representative samples of the reservoir material in some form of continuous process that will obtain only a small fraction of the total fluids flowing from the well, and thus allow treatment in a small portable testing apparatus. Such a method, consisting of a sampling tube introduced into the well tubing, has proved satisfactory.

The highest pressure and temperature available as a sampling point is at the well head before the gas is subject to atmospheric cooling or throttling action. The least amount of liquid phase is present, therefore, this is the ideal point at which to sample the well stream and obtain proportional parts of liquid and gas. To take a sample at this point, a lubricator is installed in the top of the Christmas tree. The lubricator contains a piston which carries a tube. A streamlined tip is mounted on the lower end of the tube. Casing pressure and pump pressure are applied to the upper side of the piston, hydraulically forcing the piston to the bottom of the lubricator and therefore the sampling tube down into the Christmas tree, so that the streamlined tip is at a point in the well tubing where a sample may be taken from an undisturbed portion of the fluid flow. Pump pressure is provided by a small hand pump and conveyed to the top of the lubricator with a standard drawn-copper tubing.

The portable testing apparatus is mounted in a trailer. Equipment consists of a small separator, on the bottom of which is a calibrated liquid accumulator. Means of heating and cooling are provided by exchangers. The hand pump used to force into the well tubing the piston carrying the sample tube also is in the trailer, as is a small compressor used to boost the pressure of the fluid.

After the sample tube has been lowered into the well tubing, the rate of fluid flow through the apparatus is adjusted to the proper rate. The test data are then obtained, and it is not necessary to remove he sampling tube or leave the trailer between tests.

When properly employed, this sampling-tube method for sampling gas-condensate wells will obtain a representative sample of the well fluid that

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is sufficiently accurate for all practical engineering purposes.

Effectiveness of Gravel Screens

By B. H. Sage and W. N. Lacey
California Institute of Technology

Correlation of extensive experimental results to determine the effectiveness of gravel screens, considering such factors as gravel size, condition of packing, sand size and size distribution, fluid velocity and viscosity, and thickness and arrangement of gravel screens.

A gravel screen may increase productivity of a well by increasing its effective diameter, relative permeabilities of gravel and coarse sands used in packing being so much greater than the fine producing sand that little additional resistance to flow may be expected. Permeability is not a single-valued function, but is related to many factors, including size, size distribution and shape of the particles.

Discussing theoretically the three principal classes of packing encountered, cubic, orthorhombic and rhombohedral, equations are derived and charts presented showing relative sand-content, concentration and fractions of cells sand-filled at various points throughout the packing.

A consideration of sand concentration in fluids leaving the experimental screens indicated that optimum operating conditions are close to the minimum value for the sand and gravel in combination. Viscosity of the oil and relative quantities of liquid and gas phase must also be taken into account if the conclusions are to apply.

Assumed conditions in a hypothetical situation are worked out to design a suitable screen, using formulae derived from theoretical and experimental work predicated in the paper, which a gravel diameter of 0.085-inch, and an assumed porosity of 40 percent indicate that 68 rows of packing may be obtained, with sand concentrations of 0.01 pounds per cubic foot for production rates, in the theoretical well, between 100 and 9000 barrels per day.

In general, experimental evidence indicates that there will be a gradual accumulation of sand in the interstices of the gravel screen, which will inhibit its further migration into the well, and that the sand concentration may be low. The initial low concentration of sand adjacent to the liner would be increased somewhat at higher rates of production. Use of fine gravel does not decrease the productivity of the well significantly below that which might be obtained were a much coarser gravel utilized.

A Comparison of Marsh-Funnel and Stormer Viscosities of Drilling Muds

By J. E. Owen
Geophysical Research Corporation

The Marsh funnel is used almost universally in the field to determine the viscosity of drilling muds. The Stormer viscometer is commonly used in the laboratory for a similar determination. Neither instrument is an absolute viscometer, and apparent viscosities obtained wtih either are influenced by the arbitrarily standardized conditions under which the measurements are made.

Experiments on 26 drilling muds were carried out in an effort to derive a basis and establish a correlation between the apparent viscosity values for these muds when obtained with both instruments. For this a calibration of both instruments was made in which density of the calibrating liquids entered. Corresponding to the Marsh-funnel viscosities at 1500 cc. in, 1 quart out, equivalent Stormer viscosities were obtained at a cylinder test speed of 1100 rpm.

Further, a linear relation between the logarithms of the Stormer cylinder test and the resulting apparent viscosity was found to exist for the muds tested for 200 to 1000 rpm.

Marsh-funnel viscosity measurements are expressible in absolute units which may be correlated with Stormer viscosity measurements, following procedure laid down in the paper, but certain restrictions should be recognized. The measurements cannot be applied to the calculation of flow of muds in drill pipe because of the difference in the nature of the flow. The Reynolds corresponding to the measurements indicates laminar flow, while calculation of this number for even a low rate of flow through any drill pipe of standard size indicates definite turbulent flow.

Definite applications of viscosity data are in the slope of the viscosity-speed curve, a steep slope indicating a mud of high viscosity when agitated slowly. Another characteristic of the mud determinable from the curve is that the slope is apparently a characteristic of the colloidal material of the mud itself.

Unsteady Flow of Gas Through Porus Media

By Charles R. Hetherington
Graduate Student, Massachusetts Institute of Technology,
D. T. MacRoberts
United Gas Pipe Line Company, and
R. L. Huntington
University of Oklahoma

Since the equation of continuity governing transient flow of gases through porous media cannot be integrated mathematically into a simple usable expression free from series terms, empirical and approximate equations have been advanced relating cumulative production and future production rates from gas reservoirs with time. In order to check the accuracy of these empirical equations and to obtain an insight into the initial conditions pertinent to the solution of the fundamental equation of continuity, experimental work was conducted on an "integrating machine" composed of a vertical 2-inch tube 91 6 feet high packed with unconsolidated Wilcox sand.

Data from unsteady flow runs on the 2-inch tube "integrating machine" were presented graphically, and the data were applied to obtain an equation for a specific case. The tabulated data and illustrations should aid in future investigations of this basic equation. The close agreement between equations calculated for steady-state flow and the experiments indicated that the decline of actual gas reservoirs may be treated by an application of these equations without serious error.

Natural Gas Hydrates

By Don B. Carson
Graduate Student, University of Michigan, and
D. L. Katz
Assistant Professor of Chemical Engineering, University of Michigan

Natural gases under pressure from crystalline hydrates with water. Because of the relatively high temperatures at which the hydrates exist, they become a nuisance in high-pressure gas operations where water is present, since their formation causes partial or complete plugging of valves and pipes.

From a practical standpoint, the trouble incident to hydrate formation has been solved by dehydration of the gas before it enters the plant or pipe line, or by other remedial measures.

At present, data are available on temperatures and pressures of hydrate formation for pure methane, ethane, propane *n*-butane methane-ethane mixtures, methane-propane mixtures, and some 15 natural gases, all in the presence of excess water. However, up to now no method has been available for predicting the temperature at given pressures or the pressure at given temperatures at which natural gases will form hydrates if saturated with water. The authors presented experimental data on four-phase equilibrium for the methane-propane-water, methane - pentane - water, and methane-hexane-water systems. Temperatures and pressures for equilibrium between gas, water-rich liquid, hydrocarbon-rich liquid, and hydrate were measured, as well as the percentages of methane and propane in hydrate. The data indicate that natural gas hydrate behaves as a solid solution and that pentanes and heavier hydrocarbons do not enter into the solid phases.

The substantiation that natural gas hydrates are solid solutions and the hydrate-composition data given justify an elaboration of the vapor-solid equilibrium constant concept previously proposed. Therefore the authors presented vapor-solid equilibrium constants that permit the approximation of the conditions for hydrate formation, from the composition of a gas.

A Chart to Provide Approximate Correction for Temperature and Deviation from Boyle's Law

By Albert D. Brokaw
Consulting Geologist, Brokaw, Dixon and McKee

A chart was devised to provide a simple and rapid method of correcting for temperature and compressibility of gas under relatively high pressures, such as are encountered in many deep reservoirs.

The chart was prepared by interpolating for the desired values in experimental data, after adjusting to 60° F., and combining correction factors. Fahrenheit temperatures are shown as ordinates and pressures in pounds per square inch absolute as abscissae correction factors have been plotted on the chart to give volume of gas at one atmosphere pressure under standard temperature.

The chart affords what is believed to be a simple and rapid method of determining, with a minimum of computation, correction factors that are as accurate as necessary for practical use in estimating gas reserves, and well within the possible limits of accuracy in estimating reservoir volume, and also formation temperature and pressure if actual measurements of the latter are not available.

Production Under Effective Water Drive As a Standard for Conservation Practice

By E. DeGolyer

A problem of sound engineering and conservation practice is that of keeping gas in solution, with the answer best attained by utilizing the available water drive which is present in some degree in most oil fields. By producing fields at a low rate to make the water drive effective, more gas is kept in solution,

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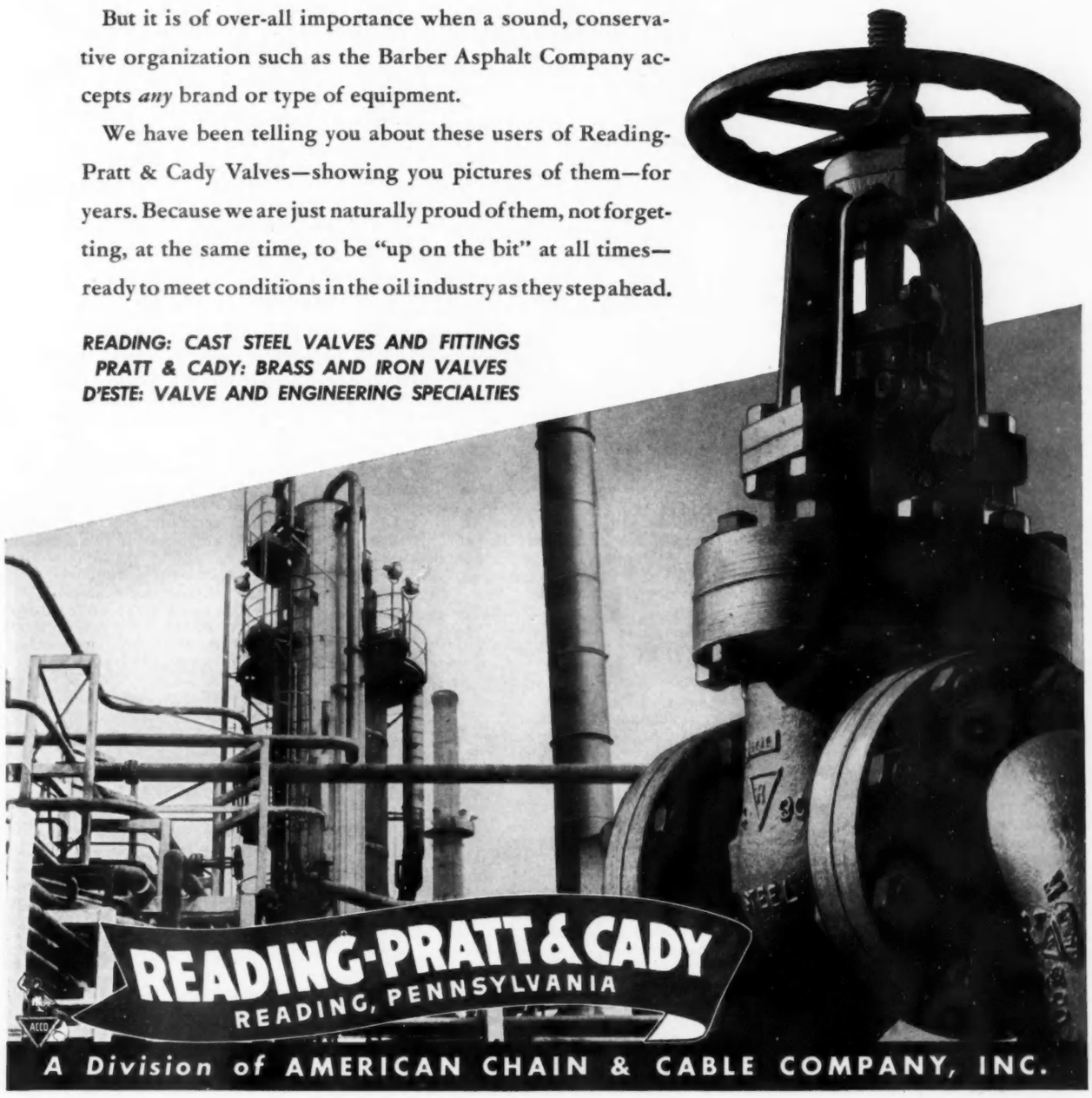

providing a conformity with good engineering and conservation practices.

Measure of degree of success in the utilization of water drive is the maintenance of bottom-hole pressure and the prevention of increases in gas-oil ratios. As some decline in the original bottom-hole pressure and production of some gas are essential, a pressure gradient from reservoir to well is necessary, and gas in amounts at least equal to gas in solution must be produced. Once the optimum pressure and gas-oil ratios have been determined, they should be maintained.

Existence of water drive is now believed to be almost universal, and reservoir conditions substantiate this conclusion as sound. The fact that it has not been more commonly recognized is attributable to the excessive rate at which most pools have been produced, with the result that water drive has not been effective, and its presence has therefore been inconspicuous.

For effective water drive, the natural influx of water must be at a rate equal to or greater than the withdrawal of fluid from the reservoir, otherwise the pool operates essentially as a gas-drive pool. The problem of making water drive effective as a producing mechanism is one requiring proper rate of production from the pool, a rate which differs for the various pools and which is determined only by trial and error. Broad rules may be laid down for groups of pools, and it is believed that uniform rate of production over a period of 25 to 30 years would make water drive effective in most Texas pools.

There are at least fourfold advantages in operating under an effective water drive: (1) a greater amount of the oil originally in place will be recovered; (2) the flowing life of wells will be prolonged and the lifting costs consequently reduced; (3) fewer wells will be required to obtain production; and (4) the bulk of proration can be based on scientific and engineering principles rather than on arbitrary, economic, or political grounds.

While water drive to a degree that can be made economically effective is not present in all oil pools, its occurrence is far more common than has been recognized generally. It is the rule rather than the exception, and in consideration of benefits realized by its presence, each new pool should be operated in an attempt to allow water drive to be effective. Exceptions should be granted only after it is definitely proved that water drive is of too low a grade to be made economically practical.

The Fitts Pool

By Kenneth R. Teis
Consulting Engineer

The Fitts pool was discovered by wildcatting in the face of general geological condemnation as lying too close to the Arbuckle Uplift. The pool is productive in several zones, the Bromide and then the McLish sands being proven first, with the Basal McLish or Wilcox following. The pool covers 5100 acres, being an east-west trending anticline limited on all sides but the north by normal faults.

Heavy acid treatments accompanied completion of the Hunton wells in the western half of the pool, boosting productivity from 5 to 250 barrels per hour. Hunton wells were too closely drilled, a ten-acre spacing proving unprofitable.

The Upper Simpson pool proved devoid of active water drive. Early assumptions of water drive led to excessive pumping installations, despite scientific forecast of reservoir performance. The producing section was not generally acidized or shot. Pressure completion was used on around 100 wells in this section, permitting identification of oil-bearing zones and the evaluation of their relative productivity.

The principal conclusions drawn by the author are that exploitation of the Fitts Hunton-lime pool would have been much more profitable had it been carried out on a wider spacing pattern; that the Fitts Upper Simpson pool is highly deficient in natural expulsive energy, and that normal operating procedure will result in the recovery of less than 20 percent of the oil originally in place; that of approximately 320 million barrels of oil originally in place in the Upper Simpson, about 60 million barrels will be recovered by primary producing methods, leaving the remainder as residual oil in the reservoir; that the structural character of the Upper Simpson is not particularly favorable to secondary recovery, but that experience indicates a properly executed program of secondary recovery will be profitable; that efficient drainage of the Fitts Wilcox reservoir will result from the methods employed therein.

An Engineering Approach to the Problem of Gas Lifting

By C. E. Tweedle
Coastal Engineers

This paper discusses considerations necessary to approach gas-lift problems from an engineering standpoint in the sense that certain variables must be studied if the best possible installation of gas-lift equipment is to be made. The practice and theory presented deal entirely with the problem of producing fluid by vertical lift, considering a solution reached if required production is obtained with minimum gas consumption or satisfactory operation obtained within available power limits.

Gas lifting is more than just running equipment in the hole, but the correlation of variables is regarded as still being in the embryonic stage. The paper was offered as basis for comparison of results leading toward evaluation of common denominator for variables.

It is the author's opinion that it is impossible to go beyond simple thermodynamics due to limited field data and limited experimental facilities. Various types of lifts are considered mathematically and examples carried through for comparisons.

In his summary the author pointed out that an engineering approach involves two major ideas; that consideration must be given the theoretical side to build a better understanding of the variables involved and that given the well characteristics and proper power supply information an analysis can be made which will enable the engineer to design an installation and select equipment for satisfactory results.

The author noted that no definite data have been presented in his paper to establish the value of theoretical considerations, but he believes that an effort by gas-lift engineers to obtain such data will amass factual evidence which can be used to improve gas-lifting efficiencies. Graphical analysis is recognized as being of value in installation design and operation checking of gas-lift operations.

Michigan Reed City Order Cuts Output Progressively

Effective October 16, the daily per-well allowable in the Reed City field was reduced from 480 to 350 barrels, and under a progressive reduction schedule it will be reduced to 200 barrels per day on December 1. The order, issued by P. J. Hoffmaster, director of conservation, following recommendations by the State Oil Advisory Board, calls for a reduction of 50 barrels every 15 days to 200 barrels.

Not only the first progressive order ever written by the state but also the new schedule is the first based on other than physical waste. Hoffmaster said the reduction by December 1 to 200 barrels per day is based on market waste.

Specifically, Hoffmaster said, the reduction was necessary to conform with markets, with completion rates in the field and with transportation facilities. According to his information the maximum market for the field now in sight is approximately 25,000 barrels and this likewise is the approximate transportation facilities. He predicted that at least 125 wells will be completed in the field by December 1. At the present time there are 57 producing wells, all but 6 capable of making the old rate of 480 barrels per day.

While issuing the new proration schedule for Reed City, Hoffmaster called a general hearing for October 27 to review both Reed City problems and proration needs in other fields.

Gulf Extending Lines In West Texas Areas

Gulf Refining Company has authorized extension of its West Texas system from Crane station, Gulf-McElroy area, to the Sand Hills and McKnight area, involving 50 miles of discharge and gravity lines. This third outlet for Sand Hills field will consist of 18-mile 8-inch discharge line, originating at pickup station in NW NW PSL Section 21, Block B-27, where the company will install 2 gas-engined reciprocating pumping units for a daily capacity of 12,000 barrels. Five-mile 8-inch gravity unit will extend from station site across heart of field to northeast extension area, while 23 miles of 4-inch will be used for a loop on the west side of the structure, and for laterals. Two-inch pipe will be used for short feeder lines. Two 80's will be erected at Sand Hills station, and a single 80,000-barrel tank at Crane station.

Texas Hearings

The Texas Railroad Commission has scheduled a hearing October 24 to consider amending the casing program in the Agua Dulce field, Nueces County.

Application of Humble Pipe Line Company for permission to abandon line serving Charco Redondo, Zapata County, has been scheduled for hearing October 25.

On October 27, the commission will hear the application of Humble Oil & Refining Company for adoption of special rules to govern the 4900-foot sand in the Kelsey field, Jim Hogg County.

A hearing October 28 will consider special rules for East Cole field, Duval County.

Owen Tells Geologists Low Prices Have Retarded Reserve Search

Program of the eighteenth annual meeting of the Pacific Section of the American Association of Petroleum Geologists was featured by an all-day symposium on the Cretaceous formation in California, the structures from which the newer San Joaquin Valley oil field are producing. The two-day meeting was held at the Ambassador Hotel on Thursday and Friday, October 16 and 17, and was opened with an address by Edgar W. Owen, national president of the group, followed by technical sessions throughout that day and the next. Highlight of the non-technical phase of the meeting was an address by Basil B. Zavoico, Chase National Bank of New York, titled "Petroleum Orients War." He spoke at a luncheon meeting on Thursday.

Coincident with the AAPG sessions, the Pacific Section of the Society of Economic Paleontologists and Mineralogists held their annual dinner meeting at the Clark Hotel with Frank Tolman presiding. Following a business meeting and election of officers, M. N. Bramette delivered a paper before the group on "Origin of the Sedimentary Rocks of the Monterey Formation."

Within the past five years the cost of finding new sources of petroleum has increased beyond the ability of the oil industry to make a profit sufficient to warrant the continued search for new reserves, Owen stated in his address. During this period the industry has increased its reserves through extensive development of old fields, rather than through new discoveries. Over the country there are surprisingly few fields in which output could be increased for an extended period. Every important oil province has radically reduced the number of proved drilling locations, he declared.

Rising taxes and greater exploration costs has sharply reduced the number of aggressive wildcatters with sufficient capital to operate effectively, he declared, the number of such operators now active being fewer than in many years.

His pessimism over the country's future oil supply was not directed entirely to rising operating costs and higher taxes, however. He took the geologists to task for being too complacent in their attitude toward their jobs, warning them that they should be more willing to shoulder some of the "risks" of the business. He urged them to embrace the more spectacular field of prospecting, even though they might in so doing be risking their "necks" by recommending large capital expenditures without any certainty of return to their employers.

Following the address of Owen at the opening session on Thursday, the symposium on the Cretaceous formation in California was presented. Abstracts of the several papers on the Cretaceous, together with other papers presented, follow:

An Introduction to the Cretaceous of California

By Olaf P. Jenkins
State Geologist of California

Bibliographic history of the California Cretaceous, beginning with J. B. Trask in 1855, is briefly outlined. A list of the various Cretaceous units of the state is presented. Distribution of these rocks from the Oregon line to the Mexican border, from the Pacific Ocean to the foot of the Sierra Nevada, is indicated on a map of California, showing, also, the Cenozoic cover, and older basement rocks and Franciscan group. General thickness of the Cretaceous, taken at various points throughout the state, are shown on a map to give data for isopachs, which in turn indicate the possible positions of geosynclinal basins of deposition. Cretaceous economic products—building stone, gold, oil, and gas—are shown to be in direct relationship to major epochs in the geologic history of California.

The Standard of the Cretaceous System

By Siemon W. Muller and
Hubert G. Schenck
Stanford University

The standard of the Cretaceous system represents a composite time-rock column—a total or complete sequence of strata between the Jurassic and the Cenozoic that can be recognized by distinctive fossils. This standard has been built up by fitting together continuous sections which are well exposed in different areas in Europe. The system is subdivided into series, stages, and zones. These divisions are based on paleontologic evidence, with no regard to thickness of strata and their lithologic character. One stage is described in detail to serve as an example demonstrating the methods employed in the establishment of a time-stratigraphic unit. The status of the boundaries between the underlying Jurassic and the overlying Cenozoic is discussed. In summarizing, the standard, provisional correlations with California are indicated.

The Cretaceous Vertebrate Record of California

By Chester Stock
California Institute of Technology

The Moreno shales exposed in the Panoche Hills and Tumey Hills of western Fresno County have yielded remains of fossil fish and reptiles. Three major groups of Cretaceous reptiles are represented, namely, duckbill dinosaurs, plesiosaurs, and mosasaurs. Relationships of these reptiles are with upper Cretaceous types. The Moreno, on the basis of vertebrate evidence, is presumably related in age to the Lance and Edmonton, and does not appear to be older than the Maestrichtian.

The Franciscan Knoxville Problem

By N. L. Taliaferro
University of California

The Franciscan is not a catchall of uncertain age but a reasonably definite stratigraphic unit of known age. Both the Franciscan and Knoxville were deposited in a geosyncline which came into existence after the Nevadan orogeny. Both were deposited during the Tithonian stage of the Upper Jurassic. Minor disturbances occurred during their deposition, but they are not separated by an unconformity. In places, conditions which resulted in typical Franciscan lithology persisted until the close of the Jurassic so that Franciscan types in one locality are contemporaneous with typical Knoxville sediments in another locality.

Cretaceous of the Santa Lucia Range

By N. L. Taliaferro
University of California

The Cretaceous of the Santa Lucia Range falls into three major divisions, separated by profound unconformities. The Lower Cretaceous rests unconformably on the Franciscan, and is unconformably overlain by the Upper Cretaceous. An even more widespread and profound unconformity occurs in the Upper Cretaceous. Upper Upper Cretaceous sediments (Asuncion group) rest on lower Upper Cretaceous (Jack Creek formation) with an angular unconformity up to 70 degrees, and overlap across all older rocks, including the crystalline basement. The Asuncion group is the thickest and most widespread of all the divisions of the Cretaceous in the Santa Lucia Range.

Cretaceous—West Side Sacramento Valley North of Willows

By Philip W. Reinhart
Shell Oil Company

The general features of the geology and stratigraphy, as determined from reconnaissance study, are discussed. Evidence is presented which indicates that the contact between the Knoxville and Franciscan is a fault having a displacement of many thousands of feet, resulting in the concealment of the basal Knoxville beds throughout the area. The stratigraphic sequence exposed along McCarthy and Elder Creeks, Tehama County, is described, and the presence of occasional foraminifera in the Mesozoic formations noted.

Upper Cretaceous Stratigraphy of the West Side of Sacramento Valley South of Willows, Glenn County, California

By James M. Kirby
Standard Oil Company of California

This article discusses the lithology of the upper Cretaceous sediments

(Chico Series) along the west side of Sacramento Valley as displayed in a series of measured and examined surface sections between Winters, Yolo County, and Willows, Glenn County. Certain recognizable lithologic units on the outcrop are described, defined, and named as a step toward the break-down of the thick Chico Series into formations adaptable for use in this region. Variations in the outcrop sections, as well as between outcrop and strategically located well sections in Sacramento Valley, are shown by correlation charts and drawings.

Cretaceous—East Side Sacramento Valley

By W. P. Popenoe
California Institute of Technology

Isolated outcrops of Upper Cretaceous beds are found in the lower stream valleys, north, northeast, and east of Redding, Shasta County. The total thickness of the exposed beds aggregates 4000 feet or more. Six well marked lithologic members, alternately predominantly sandstones and shales, may be recognized. The upper sandstones of Oak Run Valley, 2500 to 3000 feet above the base of the section, are the probable correlatives of the base of the Cretaceous section at Chico Creek, seventy miles to the south.

A Discussion of Part of the Upper Cretaceous Along the West Border of the San Joaquin Valley

By A. S. Huey and J. W. Daly
Shell Oil Company

Several stratigraphic sections of Upper Cretaceous rocks along the west border of the San Joaquin Valley are described, and correlations between the various units proposed. The relation of the type Moreno in Panoche Hills to the rocks which Anderson and Pack (USGS Bull. No. 603) mapped as Moreno north of Pacheco Pass is discussed.

Geology of the Del Valle Area

By L. A. Tarbet
Standard Oil Company of California

R. E. Havenstrite's Lincoln 1 was the discovery well of the Del Valle oil field. Production has been obtained at Jasper Petroleum Company's Videgain 1, 8000 feet west of Lincoln 1. Future development may be expected to join these two areas. The structural trap may be controlled on the north by a south-dipping fault, and on the east and south by the easterly and southerly plunge of the folded sediments. The trap on the west side of the field is obscured by a south-dipping fault. Lenticular oil sands, or minor faulting, may form the trap on the west side of the field.

Geologic Notes on the Oak Canyon Oil Field

By Wayne Loel, R. W. Clark, and Paul P. Goudkoff

The Oak Canyon field is a plunging anticline with migration stopped up the pitch by a fault. Two sands have been developed. One, about 1400 feet below the top of the Delmontian, is Upper Mohnian and is older than the second sand in the Del Valle field. The lower sand is nearly 6000 feet into the Miocene, and is probably in Lower Mohnian. Top of the Lower Mohnian is about 3290 feet in Lechler 2 well. Top of the Upper Mohnian is marked by an unconformity which appears to be both structural and erosional.

Oil Fields—Before Discovery and After Development

By James C. Kimble
General Petroleum Corporation

The interpretations which led to the discovery of 14 California oil and gas fields are compared with post development geology to illustrate the character of data necessary for discovery. Interpretations are depicted by means of structural and stratigraphic sections and structural contour maps with the use of 35 slides. The fields discussed are representative of discoveries based upon surface, sub-surface, and seismic methods, and include: Aliso Canyon, Buena Vista Gas, Canal, Coles Levee-Tupman area, East Coalinga-Eocene, Long Beach Extension, Padre Juan, Playa del Rey, Potrero-Basin area, Rio Bravo, Newhall-Potrero, Santa Maria Valley, Seal Beach and Wilmington.

The Relationship Between Some Types of Gravity Anomalies and Structure

By Robert H. Miller
Western Gulf Oil Company

A brief discussion of the principle of the gravimeter. Over many of the anticlinal structures in California gravity minima occur. Gravity disturbances of the same magnitude and extent would be set up by the warping of the relatively shallow beds during the growth of the fold. Shallow structure maps of some of the Central Valley fields show that the crests of the fold have collapsed under tension.

Some Drilling-Time Logs and Their Uses

By Robin Willis
Hilldon Oil Company

Examples of drilling-time or rate-of-penetration logs, with corresponding electric logs, are shown to illustrate their use for progressive correlation while drilling, for checking depths of shooting intervals, and for interpreting electrical anomalies such as shells. Methods of taking them and their limitations are touched on.

Northwest Extension of the Inglewood Field

By Robin Willis
Hilldon Oil Company

Miocene production in the Northwest Inglewood field comes from 300 feet of lenticular sands below the nodular shale, on a southwest-dipping monocline close by a large northeast-dipping overthrust which duplicates from 200 to 500 feet of beds. Above this lies the shallower anticline of the Pliocene field, with many smaller thrusts recognizable in the electric logs, particularly on the northeast flank. The new zone is noteworthy for an exceptional formation pressure of about 5000 pounds per square inch.

Crocker Flat Infolded Landslide and Coarse Clastics in the Temblor Range, California

By Russell R. Simonson and Max L. Krueger
Union Oil Company of California

The Crocker Flat landslide, located in the vicinity of Recruit Pass northwest of Fellows, is composed largely of Lower Miocene and Oligocene sands and silts, and a minor amount of Middle Miocene shale, which were superimposed upon, and subsequently infolded in, younger Miocene sediments. This landslid mass descended by gravity, in Upper Miocene time, from a highland located within or west of the San Andreas Fault zone, prior to the deposition of Santa Margarita (Upper Miocene) fanglomerates. During Santa Margarita time, coarse clastics derived from crystalline rock masses west of the Temblor Range, were deposited unconformably over the Crocker Flat landslide and adjacent area. The Santa Margarita beds, and the Crocker Flat landslid mass, were involved in the post-Miocene orogeny which elevated the Temblor Range and folded and faulted both of these units. Infolded and downfaulted outliers are the main areas of Santa Margarita sediments preserved from later erosion on the top of the range.

On the summit of the range, clastics, so coarse that they have been mapped as "Basement Complex" by several workers, are considered to be Santa Margarita in age because they are inter-tongued and grade laterally into sands and boulder beds containing Santa Margarita fossils in adjacent areas. Furthermore, a portion of the landslid Lower Miocene and Oligocene sediments of the Crocker Flat area are unconformably beneath these coarse clastics. This relationship also tends to preclude the premise of this "so-called basement" being a part of a huge overthrust sheet.

The crystalline rocks, mapped as "Basement Complex" on the west side of the Range, are not in place but are detrital in origin and of Santa Margarita age also; these sediments owe their coarseness to the proximity of the source and to possible minor landsliding during deposition.

The intercalated lenses of granitoid and schistose boulders and sands in the Upper Miocene punky shales on the northeast side of the Temblor Range are equivalent in age to the coarse Santa Margarita fanglomerates believed to have had a common western source, which must have been near at hand, within or west of the San Andreas Fault Zone. The erosional remnants of Santa Margarita fanglomerate along the summit, and higher parts of the Temblor Range, are regarded as being normally depositional in origin, and not klippen remnants of an overthrust sheet; these deposits represent an intermediate facies between the interbedded conglomerate and punky diatomaceous Santa Margarita on the northeast, and the coarse conglomerates on the southwest side of the range.

The Recruit Pass fault is a normal fault with its western side downthrown; it is thought to be one of the lines along which uplift occurred to give the present-day elevation to the Temblor Range.

Radioactivity Well Logging Through Casing

By Lowell C. Beers
Lane-Wells Company

The method of obtaining radioactivity logs is explained, and some correlation sections are illustrated to show applications of the method. The reactions of different lithologic units were shown, and certain theoretical considerations were presented to account for the radioactivity variations in sediments.

Washington Roundup

[*Continued from page 14*]

presently discovered and developed, and the terms 'lean gas,' 'dry gas' and 'tail gas' are used in the same sense as those terms are generally understood in the petroleum industry."

Field Staff

Field organization of the coordinator's office is rapidly being completed and district offices shortly will be operating in each of the five oil districts.

The recruiting of personnel has not yet been completed, but the coordinator announced during the week the names of a number of the key men in each district, as follows:

District No. 1 (headquarters in the Chanin Building, 122 East 42nd Street, New York): district director of refining, Dustin W. Wilson, consulting engineer with M. W. Kellogg Company, New York; district director of marketing, Louis H. Spiner, executive of LaClede Gas Company, St. Louis; district director of production, James J. Wylie, geologist with Huntley & Huntley, Pittsburgh; office manager, Walter J. Heison, formerly with the Interior Department at Minneapolis.

District No. 2 (headquarters to be at 120 South LaSalle Street, Chicago): district director of production and director in charge, Wirt Franklin, Ardmore, Oklahoma; district director of refining, Earl Petty, executive of the American Locomotive Company, New York; district director of transportation, Walter DuMont, The Pure Oil Company, Chicago; office manager, Alfred W. Gaede, formerly with the Interior Department at Dulce, New Mexico.

District No. 3 (headquarters to be in the Esperson Building, Houston): district director of refining, Gordon T. Granger, executive of Bareco Oil Company, Corpus Christi; district director of production, Grady H. Vaughn, Houston; district counsel, Percy J. Rice, Dallas attorney.

District No. 4 (headquarters to be in the U. S. National Bank Building, 817 Seventeenth Street, Denver): district director of production, Michael J. Foley, The Ohio Oil Company, Casper; office manager, Albert R. Novak, formerly with the Interior Department at Boulder City, Colorado.

District No. 5 (headquarters to be in the Subway Terminal Building, Hill, Olive and Fourth streets, Los Angeles): district director of production and director in charge, Lieutenant Commander W. H. Osgood, on loan from the United States Navy; district director of marketing, Charles B. Garretson, executive secretary of the Fair Practices Association, Los Angeles.

Legislation

Construction of the proposed $80,000,000 Texas-New York pipe line, already up against difficulties in securing priorities for pipe, faced a new hurdle this week as Senator W. Lee O'Daniel of Texas introduced in Congress and announced his intention of pressing legislation to amend the Cole Pipe Line Act to bar the use of any defense pipe line for the transportation of natural gas after the emergency.

The bill would add two new sections to the act, one providing that any land condemned for a pipe line under the law should revert to the original owner in the event the line

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is used for natural gas, the other requiring the President to take over such a line, dismantle it, provide for the sale of the salvaged materials and distribute the net proceeds therefrom to the owners of the line.

Introducing his bill October 13, O'Daniel told the Senate that Congress passed the Cole Act to provide additional facilities for supplying the East Coast with crude oil and gasoline and that, without the safeguards he proposed, the law "may be used as authority for constructing pipe lines that can, may, and possibly will be used for the transportation of another product, a product which the members of Congress no doubt did not contemplate at the time the act was passed, and that product is natural gas.

The Senator pointed out that several attempts have been made in the past to construct natural-gas lines from Texas to the east, which have failed "because most of the Texas citizens oppose the plan." He renewed his charges that the 11-company proposal to the coordinator for construction of a 24-inch line was that originally made in August, 1940, with the organization of the Reserve Gas Pipe Line Company, which planned a 24-inch line to New York to cost $80,000,000—exactly the same, he said, as proposed in the current project.

He charged also that one of the three organizers of the Reserve company was Gardner Symonds, vice president of Chicago Corporation of which C. F. Glore of Glore, Forgan & Company is a director; Glore, Forgan & Company have participated in the financing of Standard Oil Company of California, of which Deputy Coordinator Ralph K. Davies is a vice president.

"In view of these circumstances," he asserted, "there may be reasons to believe that the National Defense Pipelines, Inc., and Emergency Pipelines, Inc., which are to operate under the authority of this act, have the same plan of operation in mind as far as transporting natural gas is concerned that the Reserve Gas Pipe Line Company had on August 1, 1940."

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"Ickes Says"

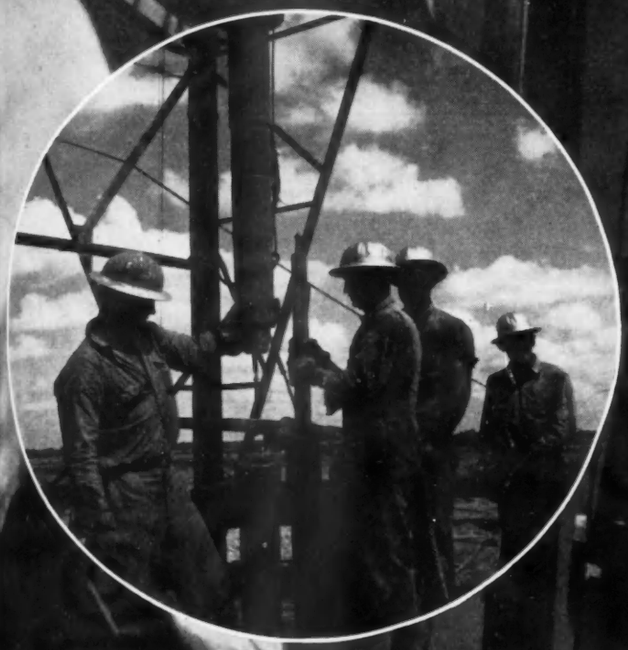
"No comment" on Senator O'Daniel's bill for the immediate scrapping of any national defense oil pipe line switched to move natural gas after the emergency.

"Still pressing" the application for priority on seamless tube for the construction of the Texas-New York pipe line.

"Supporting" any application of any oil company for an increase in crude prices if it can be proven that such increase is justified by rising costs, and has before him figures submitted by Phillips Petroleum Company in support of its proposed 25-cent increase for Mid-Continent. If the figures prove Phillips' case, representations will be made to Leon Henderson, chief of OPA, who now is considering the matter.

"Cleaned up" on shipments to Russia, having met all their immediate demands but with some requests still to be filled for future delivery.

Not impressed by proposals of Trans-American Pipe Line Company to build a crude-oil line from Texas to Savannah. Spoke disparagingly of "promoters" who "spend most of their time on the Hill" and expressed doubt whether the company had sufficient financial backing to construct the line. Refused to comment on report that Texans favored TAPCO line over the long-distance plan.



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Agitation for Crude Raise Continues; Products Strong

In the markets, interest has continued centered on crude oil prices of the Mid-Continent and the Middle West, as pressure for an advance has been placed on the Office of Price Administration, a major company having presented evidence in justification of a proposed 25-cent Mid-Continent increase, while producers of the Southwest have joined generally in agitation for higher postings.

Meanwhile, the markets for refined products took due cognizance of the indications that crude prices would be increased, and in contracting for future business, refiners were increasingly guarded and specified that for given increases in their costs of crude, certain increases in prices of gasoline and other products would be required.

In the spot market, however, quotations were mostly unchanged, as refiners as well as producers looked to Washington and were hesitant to increase prices, against the wishes of the government.

Natural gasoline, volatile market-wise as well as physically, has been an exception to the rule of unchanging prices, and following earlier improvement in recent weeks, prices again moved higher last week in the primary markets.

Under the East Coast rationing of gasoline to dealers, there has been no difficulty on the part of suppliers in providing the quantities that could be distributed, and there has been no occasion for any bidding up of prices in that area. Likewise, other products remained generally unchanged in price on the Atlantic seaboard, with no tightness of supplies in evidence.

In the Mid-Continent, shipments of gasoline against contracts continued heavy, but there was less difficulty for refiners in supplying the requirements of the markets. Much interest was shown in light fuel oils, and although most refiners were largely committed for the season on their potential production, some plant owners had unsold supplies that they were holding in the hope of better prices. Demand for Mid-Continent lubricants was heavy, but prices remained generally unchanged.

In the Middle West, there was reported some let-up in demand for gasoline, although shipments against contracts continued above normal. Light fuel oils moved in good volume, and demand for heavy fuel oil was reported on the increase.

Trends of Operations and Changes in Stocks

Figures are from American Petroleum Institute weekly reports, except those on crude stocks, which are from Bureau of Mines weekly reports

WEEK ENDED	Crude Oil Production (Barrels Daily)	Crude Runs to Stills (Barrels Daily)	Crude Oil Stocks (Barrels)	Gasoline Stocks (Barrels)	FUEL OIL STOCKS	
					Gas Oil & Dist. Fuels	Residual Fuel Oil
1939:						
April 22	3,526,700	3,280,000	277,156,000	[2]87,769,000	21,085,000	105,035,000
April 29	3,568,200	3,405,000	278,440,000	86,794,000	[7]25,844,000	[7]108,409,000
May 6	3,580,900	3,275,000	[3]278,607,000	86,216,000	26,167,000	108,597,000
August 5	[2]3,909,400	3,445,000	268,982,000	76,431,000	35,601,000	114,512,000
August 26	[1]3,690,800	3,475,000	246,982,000	73,475,000	37,722,000	116,237,000
October 7	3,435,850	3,505,000	231,564,000	[3]71,152,000	38,549,000	114,397,000
October 21	3,771,550	[2]3,650,000	[2]229,127,000	72,122,000	39,358,000	115,060,000
1940:						
January 27	3,611,600	3,470,000	237,339,000	87,914,000	27,407,000	103,015,000
February 24	3,732,100	3,490,000	240,836,000	96,719,000	25,390,000	103,419,000
March 30	3,841,250	3,585,000	250,561,000	101,370,000	23,778,000	105,081,000
April 20	3,858,550	3,535,000	254,881,000	[1]102,817,000	24,779,000	103,323,000
April 27	3,845,250	3,555,000	256,670,000	102,452,000	24,997,000	102,552,000
May 25	3,835,650	3,580,000	259,330,000	100,297,000	28,356,000	104,015,000
June 22	3,846,450	[2]3,690,000	260,891,000	97,276,000	32,751,000	104,683,000
June 29	3,639,550	3,625,000	262,059,000	95,142,000	33,590,000	104,486,000
July 27	3,690,400	3,555,000	262,579,000	90,173,000	38,981,000	105,924,000
August 31	3,501,350	3,575,000	265,865,000	85,393,000	44,766,000	108,774,000
September 28	3,799,950	3,600,000	263,609,000	82,273,000	47,986,000	108,450,000
October 26	3,640,300	3,565,000	262,746,000	80,891,000	[1]48,893,000	108,475,000
November 9	3,584,200	3,510,000	261,631,000	[3]79,847,000	48,408,000	107,687,000
November 30	3,335,050	3,510,000	262,679,000	80,284,000	46,212,000	106,618,000
December 28	3,385,500	3,585,000	261,552,000	83,274,000	42,266,000	102,620,000
1941:						
January 25	3,599,100	3,625,000	260,093,000	88,762,000	39,039,000	100,297,000
February 22	3,629,650	3,590,000	261,783,000	95,812,000	34,381,000	98,631,0000
March 29	3,746,550	3,625,000	266,187,000	[2]99,727,000	29,949,000	96,152,000
April 26	3,726,850	3,675,000	266,149,000	96,647,000	29,543,000	94,732,000
May 31	3,786,100	3,699,000	262,356,000	93,845,000	33,524,000	92,757,000
June 28	3,847,250	3,930,000	259,399,000	91,461,000	35,732,000	92,896,000
July 12	3,870,750	[1]4,090,000	255,567,000	89,561,000	37,812,000	92,699,000
August 2	3,695,250	3,845,000	252,535,000	86,779,000	41,433,000	94,800,000
August 30	4,004,700	4,070,000	249,413,000	81,672,000	45,351,000	95,052,000
Sept. 6	3,814,950	3,995,000	247,528,000	81,571,000	46,127,000	95,125,000
Sept. 13	4,033,700	4,010,000	246,164,000	80,555,000	47,271,000	95,753,000
Sept. 20	[1]4,074,200	3,995,000	246,500,000	80,199,000	48,907,000	95,005,000
Sept. 27	4,060,000	3,980,000	246,649,000	81,003,000	49,950,000	95,251,000
October 4	3,860,750	4,015,000	246,144,000	80,870,000	49,553,000	96,016,000
October 11, 1941	4,070,950	4,075,000	.....	81,381,000	51,289,000	95,527,000
October 11, 1940	3,641,550	3,529,000	[4]263,551,000	81,029,000	48,895,000	107,348,000
Change in past year.	+11.7%	+15.5%	—7.07%	+.43%	+4.8%	—20.32%

[1] All time peak. [2] Peak for year. [3] Lowest since April, 1922. [4] Stocks Oct. 5, 1940.
[5] Lowest since October, 1922, due to shut down of six Mid-Continent states. [6] Lowest for year.
[7] Prior to April 29, 1939, data did not include stocks at terminals, in transit, etc., except in California.
[8] October, 1940, daily average.

Crude Output at New Peak; Illinois Has Come-back

United States crude oil production was greater than ever before in the week ended October 18, having averaged 4,123,350 barrels daily. That was 57,400 barrels more than the daily output in the previous week and 111,350 barrels more than the daily average market demand for domestic crude in October, as estimated by the Bureau of Mines.

Illinois again was in the limelight, as production recovered briskly following a set-back the previous week. The state averaged 422,550 barrels daily, against 406,300 the week before.

Kansas output also was noteworthy, having jumped from 231,650 barrels daily the previous week to 259,800 for the week of October 18. The new rate was 6800 barrels in excess of indicated market demand.

Texas was up about 4000 barrels to 1,468,500 daily, and California showed a 2100-barrel increase to 664,500 barrels a day, while Louisiana was up 10,000 barrels to 345,800. Oklahoma, in contrast, was down about 10,000 barrels to 418,250 daily.

Production and Runs High; Eastern Stocks Bettered

The industry has continued to produce and refine near-record volumes of crude oil, in response to the unprecedented demand for petroleum products, and remarkably good results are being achieved in connection with the special problem of supplying the East Coast. These facts were revealed in the latest statistics of the industry, covering the week ended October 11.

During that week there was an aggregate increase of 167,000 barrels in the stocks of gasoline, light fuel oil, and residual fuel oil in the East Coast district, in contrast with a decrease of 20,000 barrels for the three products in the corresponding week last year. The changes by products were as follows:

Product—	Change in Week Ended Oct. 12, 1940 (Barrels)	Change in Week Ended Oct. 11, 1941 (Barrels)
Gasoline	—329,000	—192,000
Gas oil and distillates	+336,000	+615,000
Residual fuel oil	— 27,000	—256,000
Total 3 principal products	— 20,000	+167,000

These figures show that East Coast stocks of the major products were being replenished better in the week of October 11 than in the like week last year by the net amount of 27,000 barrels daily, a performance which if maintained naturally would steadily improve the Eastern inventory situation.

Latest figures on East Coast stocks of crude are those of the Bureau of Mines for the week ended October 4, and in that week there was a build-up of 805,000 barrels in crude at refineries and a reduction of 21,000 barrels in crude in pipe lines, a net increase of 784,000 barrels for the 7 days, or an average of 112,000 barrels daily.

United States crude-oil production jumped within a few thousand barrels

of a new all-time peak in averaging 4,070,950 barrels daily in the week ended October 11, and at that rate was 11.7 percent higher than in the corresponding week last year, an increase that was about in line with the gain that has occurred meanwhile in demand for petroleum products.

Crude runs to all stills in the United States also rose close to a new high in the week of October 11, having averaged 4,075,000 barrels daily, up 60,000 from the previous week and 15.5 percent above the daily average runs of October last year, the plant operations likewise having been well in line with the increased consumption of oil.

At the 4,075,000-barrel-daily rate, the refineries of the country were operating at 94.7 percent of rated capacity. Those on the East Coast, having processed 636,000 barrels of crude daily, operated at 94.5 percent, after having averaged during the previous week 640,000 barrels daily, or 95.1 percent of capacity.

Appalachian plants operated at 92.8 percent of capacity, Illinois-Indiana-Kentucky plants at 102.0 percent of rated potential, Oklahoma-Kansas-Missouri refineries at 91.3 percent, Inland Texas 84.9 percent, Texas Gulf at 100.1 percent, Louisiana Gulf Coast at 106.8 percent, North Louisiana-Arkansas at 121.3 percent, Rocky Mountain at 80.9, and California at 82.1 percent.

Stocks of gasoline were increased from 80,870,000 to 81,381,000 barrels in the week ended October 11, and the latter figure compared with 81,029,000 barrels for the corresponding date last year. East Coast stocks were reduced

Wholesale Prices of Refined Products in Principal Markets

	Range Last Week (Cents a gal.)		Changes from Week Before	
REFINED GASOLINE				
Oklahoma Refineries:				
60 Octane and Under	5¼	5⅝	...	...
63-66 Octane	5⅝	6	...	...
72-74 Octane	6	6⅜	...	...
80-82 Octane, Ethyl	6¾	7¼	...	...
Mid-Western Tank Car:				
60 Octane and Under	5¼	5⅝	...	...
63-66 Octane	5⅝	6	...	...
72-74 Octane	6	6⅜	...	...
80-82 Octane, Ethyl	7⅜	7⅞	...	...
New York Harbor:				
68-70 Octane	8	8	...	...
72-74 Octane	8	8½	...	...
Min. 80 Octane, '39 Research	8½	9	...	...
Gulf Coast:				
60 Octane unleaded	5½	5¾	...	...
65 Octane unleaded	5¾	6	...	...
68 Octane unleaded	6¼	6½	...	...
70 Octane unleaded	6¼	6⅝	...	...
72-74 Octane leaded	6¼	6⅝	...	...
Min. 80 Octane, '39 Research	6½	6¾	...	...
NATURAL GASOLINE				
Grade 26-70:				
F.O.B. Group 3	5½	5½	+¼	+¼
F.O.B. Br'kenr'ge, Tex.	4¾	4¾	+¼	+¼
KEROSENE				
Oklahoma Refineries:				
41-43 water white	4⅝	4¾	...	...
42-44 water white	4½	4⅞	...	...
Mid-Western Tank Car:				
41-43 water white	4⅝	4¾	...	...
42-44 water white	4½	4⅞	...	...
New York Harbor	5⅜	5¾	...	...
RANGE OIL				
At Oklahoma Refineries	4	4⅜	...	...
In Mid-Western Market Group 3, basis	4	4¼	...	...
LIGHT FUEL OILS				
Oklahoma Refineries:				
No. 1 straw	3½	4¼	...	...
No. 3	3½	3⅝	+⅛	...
Mid-Western Tank Car:				
No. 1 white	3⅞	4½	...	...
No. 3	3½	3⅝	+⅛	+⅛
New York Harbor:				
No. 1	5⅜	5¾	...	...
No. 3	5¼	5¼	...	...

	Range Last Week (Per Bbl.)		Changes from Week Before	
HEAVY FUELS				
Oklahoma Refineries:				
No. 6	$0.80	$0.90	...	...
Mid-Western Tank Car:				
No. 5	.85	.85	...	...
No. 6	.85	.87½	...	...
New York Harbor:				
No. 5	1.65	1.75	...	...
No. 6	1.35	1.50	...	...
BUNKER C FUEL OIL (Per barrel, ships' bunkers)				
Gulf Coast	$0.85	$ .95	...	...
New York Harbor	1.35	1.50	...	...
DIESEL OIL (Per barrel, ships' bunkers)				
Gulf Coast	$1.55	$1.55	...	...
New York Harbor	2.15	2.15	...	...
LUBRICATING OIL (Cents a gal.)				
Oklahoma Refineries:				
Bright Stock, 150-160 viscosity at 210° 10-25 pour test	23	23	+½	...
Neutral oil pale No. 3 Color, 150 viscosity at 100°, 0-10 pour test	14½	14½	...	...
Western Pennsylvania:				
Bright Stock, 145-155 viscosity at 210°, 25 pour test	25	27½	...	...
Neutral Oil No. 8 Color, 150 viscosity at 70°, 25 pour test	33	33	+2	+2

United States Crude Oil Production

Estimates Compiled by The OIL WEEKLY

DISTRICT OR STATE	Bureau of Mines Estimate of Daily Demand (October)	State Allowable (Barrels Daily in October)	BARRELS DAILY FOR WEEK ENDED Oct. 11	Oct. 18
TEXAS:				
Texas Panhandle	.....	.....	84,500	80,500
North Texas	.....	.....	104,200	104,600
West Central Texas	.....	.....	30,700	31,200
West Texas	.....	.....	280,300	283,400
East Central Texas	.....	.....	83,800	85,800
East Texas Field	.....	.....	370,400	370,100
South Texas	.....	.....	217,900	220,300
Texas Gulf Coast	.....	.....	292,600	292,600
Total Texas	1,420,100	1,433,957‡	1,464,400	1,468,500
CALIFORNIA:				
Long Beach	.....	.....	38,700	38,000
Midway-Sunset	.....	.....	55,400	49,000
Kettleman Hills	.....	.....	38,200	40,500
Wilmington	.....	.....	88,200	88,500
Others	.....	.....	442,000	448,500
Total California	613,200	613,200*	662,400	664,500
OKLAHOMA:				
Oklahoma City	.....	.....	88,700	79,050
Seminole Area	.....	.....	110,950	112,175
Others	.....	.....	228,450	227,025
Total Oklahoma	481,500	428,000	428,100	418,250
ILLINOIS:				
Salem	.....	.....	78,300	77,500
Louden	.....	.....	58,000	62,050
Centralia	.....	.....	9,000	9,000
Other New Pools	.....	.....	248,850	261,700
Old Pools	.....	.....	12,150	12,300
Total Illinois	399,200	.....	406,300	422,550

DISTRICT OR STATE	Bureau of Mines Estimate of Daily Demand (October)	State Allowable (Barrels Daily in October)	BARRELS DAILY FOR WEEK ENDED Oct. 11	Oct. 18
LOUISIANA:				
North Louisiana	.....	.....	79,400	80,300
South Louisiana	.....	.....	255,800	265,500
Total Louisiana	332,000	339,233	335,200	345,800
KANSAS	253,000	253,000	231,650	259,800
NEW MEXICO	114,600	114,600	114,500	116,500
EASTERN STATES:				
Pennsylvania Grade	73,800	.....	75,250	75,300
Others, Eastern	24,300	.....	18,500	18,200
Total Eastern States	98,100	.....	93,750	93,500
MOUNTAIN STATES:				
Wyoming	84,300	.....	87,800	90,100
Montana	20,300	.....	20,400	20,200
Colorado	5,000	.....	4,900	4,800
Total Mountain States	109,600	.....	113,100	115,100
MICHIGAN	44,100	50,000†	53,650	56,800
INDIANA	20,100	.....	19,950	19,500
ARKANSAS	78,200	73,415	74,800	71,500
MISSISSIPPI	43,900	.....	61,250	64,400
NEBRASKA	4,300	.....	6,900	6,650
§Total 8 Prorated States	3,336,700	3,305,405	3,364,700	3,401,650
Total United States	4,012,000	.....	4,065,950	4,123,350

* Recommendation of Conservation Committee of California Oil Producers.
† Estimate of actual production under prescribed regulations, which do not fix a definite state total allowable.
§ Texas, California, Oklahoma, Louisiana, Kansas, New Mexico, Arkansas, Michigan.
‡ Calculated daily average of actual production at beginning of October, allowing for usual under production of 3½ percent below net allowable, which was figured as of October 1, at 1,485,966 barrels daily. However, allowable normally increases as new wells are completed, and actual daily average production for month is expected to conform with Bureau of Mines estimate of demand. Under October order, most Texas fields were ordered shut down October 4, 5, 11, 12, 18, 19, 25, 26 and 31. Panhandle was ordered shut down October 5, 12, 19 and 26.

192,000 barrels, from 18,579,000 to 18,387,000 barrels, and the latter amount compared with 19,519,000 barrels on hand October 12 last year.

Stocks of gas oil and distillate fuel in the United States were increased from 49,553,000 to 51,289,000 barrels in the week ended October 11, and then were about 2,300,000 barrels (4.8 percent) larger than a year previously, when the total was 48,895,000 barrels. East Coast stocks of these oils were increased 615,000 barrels during the week, from 18,803,000 to 19,418,000 barrels, and the latter quantity was more than a million barrels larger than the inventory of 18,254,000 barrels on hand October 12 last year.

The national inventory of residual fuel oil further came down, from 96,016,000 to 95,527,000 barrels in the week ended October 11, and then was about 12,000,000 barrels smaller than a year earlier, when the total was 107,348,000 barrels, although most of that reduction has been in California. On the East Coast, the stocks of the heavy fuels were lowered in the week of October 11 from 10,482,000 to 10,226,000 barrels, and the latter amount compared with 12,803,000 barrels in storage a year ago.

California Committee Submits Production Plan

Approval of a plan for the producing division of the petroleum industry for District No. 5 (Pacific Coast Area) has been voted by the Production Committee for the district, according to E. E. Pyles, chairman.

"The plan has been submitted to the Office of Petroleum Coordinator Harold L. Ickes in Washington, with the committee's recommendation that it be approved. Final approval or disapproval will come from the coordinator, under the method of operation of the Office of Petroleum Coordinator for National Defense," Pyles stated.

The plan was worked out by a subcommittee of the production committee for District No. 5, and given final approval of the full committee after nearly three weeks' constant work. Formulation of a program was undertaken in response to a recommendation from Ickes in a letter to Pyles, in which Ickes said that "conditions now prevailing in the petroleum producing industry of California have reached such a stage that your committee should give this subject (a program for voluntary oil conservation) your immediate and undivided attention."

Full details of the plan will be made public when it has been approved by the coordinator.

Texas Drilling Permits

Permits for drilling 105 wells in Texas were approved last week by the Texas Railroad Commission, 119 less than were authorized the week before.

Holding first place in the state was Southwest Texas with 60 locations, while Gulf Coast operators reported 10 permits granted. There were 18 permits approved in East Central Texas, and none was reported from the East Texas field.

The commission authorized 6 wells in West Texas, 6 in West Central Texas, 5 in the North Texas District, and none in the Panhandle.

World-Wide Developments

Mexico Seeks Barter Of Oil for Equipment

Correspondents in Mexico City recently reported that Mexico is trying to make a barter agreement for oil-field equipment made in the United States.

A new York Company, called La Tecnica, headed by Ortiz Rubo, recently signed a contract with the Mexican petroleum administration for purchase of production and refining equipment with payment in crude oil. Total amount of the transaction is possibly $18,000,000, considered sufficient to modernize Mexican oil industry

The proposed deal is said to be dependent on ability of Mexican government to get priorities from Washington to ship equipment and ability to secure tankers for exporting crude. Both of these problems are reported to have been taken up with United States officials.

Eduardo Saurez, Mexican finance minister, is now in Washington and said to be negotiating for the machinery in exchange for Mexican oil for use by the United States Navy.

It is thought the successful outcome of these negotiations would considerably lessen Mexico's need for American capital for the oil industry, thereby weakening strategic position of American companies relative to the expropriation issue.

Venezuela Output Reached New Peak in August

Venezuela's total crude oil production in August, 19,769,000 barrels, reached an all-time peak, being 1 percent greater than the previous monthly record established in October, 1939. The August figure represents the culmination of a steady climb maintained ever since last January following the serious drop in production last fall resulting from a loss of export markets.

Compared to January, Venezuelan production in August increased by 30 percent. This gain resulted from increases in both the western and eastern fields. In the west, the Lake fields of Cabimas, Lagunillas, Tia Juana and Bachaquero had a 33-percent increase despite a material drop in Bachaquero. Production at Mene Grande rose by 24 percent, and the August output of Cumarebo was over 5 times that in January.

In Eastern Venezuela it was the newer, high-gravity fields which had a marked gain in production since the first of the year. Of these, the major fields of Oficina, Jusepin, San Joaquin and El Roble produced 3,154,000 barrels in August, an increase of 38 percent over January production. The older, low-gravity fields of Pedernales, Quiriquire and Temblador, with August production of 2,200,400 barrels, showed an increase of only 3 percent over last January.

The above gains in Venezuelan production have followed a marked recovery in exports. The export slump engendered by war developments in May-June 1940 was overcome last spring by rising demands from the United States, Canada and Great Britain. Exports in August totaled about 18,000,000 barrels, a 50 percent gain over January.

Standard Oil Company of Venezuela has a gasser in Mulata 1, the first test drilled on the Amana Concession, eastern Venezuela, under agreement with Pantepec Oil Company, and has spudded a second test. Mulata 1, 1.4 miles east of Venezuelan Petroleum Company's Santa Barbara 1 producer, was drilled to 4100 feet. The well recently tested at rate of about 1,200,000 feet of gas per day through a 3-inch orifice. Flowing pressure through a 2½-inch was 250 pounds and closed-in pressure was 1575 pounds. There was a small showing of oil.

Mulata 2, 1300 meters south of No. 1, was spudded October 7 and is drilling below 300 feet. Gas from No. 1 is being used as fuel.

In the El Roble field of Pantepec-Standard, Roble 5 is a producer of 42.5-gravity oil. The first hour test at the 9805-9850-foot interval showed a flow at the daily rate of 1128 barrels through a 3/8-inch choke. Roble 6 is drilling below 9123 feet, and had showings of oil and gas at around 8900 feet. Roble 7 will be located 1200 meters east of No. 5, and Roble 8 will be located 1200 meters west of No. 2. Both 7 and 8 will be spudded in on completion of Nos. 5 and 6. Roble field was producing 6165 barrels from 4 wells daily on September 30.

Socony-Vacuum Oil Company was coring its Guario 3 in eastern Venezuela below 10,700 feet and drilling below 6800 feet in Guario 4. Production of the Guario field is being held in to an average of 340 barrels per day. Socony's 11,300-foot Anaco 1 continues under test.

Petrolera Las Mercedes Company was making a drill-stem test of Mercedes 2, total depth 4616 feet, in Guarico state, Venezuela. No. 1 was abandoned last summer.

Colombian Wildcat Produces At Rate of 480 Barrels Daily

On a test several weeks ago, Shell Oil Company of Colombia's Casabe 1 wildcat drilled on Compania de Petroleo El Condor's Yondo Concession produced at the rate of 480 barrels daily. This showing is reported as the most encouraging in several years outside the De Mares and Barco Concessions. Since 1937, 20 wildcats have been drilled off these two concessions without discovering a new field. Casabe 1, on the left bank of the Magdalena river opposite the Barranca Bermeja refinery of Tropical Oil Company, was down 8280 feet on September 1. Oil sands are reported found at the 6748-6993- and 7435-7602-foot levels, which correspond to the B and C zones of the De Mares Concession fields.

Tropical Oil Company's Cimitarra 1 wildcat, middle Magdalena River Valley of Colombia, was drilling below 7480 feet a few weeks ago.

On the Barco Concession, Colombian Petroleum Company is rigging up North Sardinata 1, a test about 4 miles south of South Sardinata 1, which was plugged back from 4717 to 4525 feet and is temporarily suspended. The Company's Tres Bocas 2-A was coring at 4417 feet.

U. S. FIELD OPERATIONS

Illinois Basin

Two Richland County Wildcats Show Production

Two Richland County wildcats show for producers; Wayne County wildcat cores Aux Vases and McClosky pay; extension well of White County's Mill Shoals field on production; two Lawrence County wildcats show for producers.

Richland County: Ohio Oil Co.'s Lambert 1, C S½ NW SW 20-3n-14w, 2 miles north of Parkersburg field, flowed 174 bbls in 14 hours after 2500-gallon acid treatment in McClosky lime at 3137-49 ft. Midway between Lambert 1 and field, Ohio's M. Walden 1, C S½ NW SW 20-2n-14w, was abandoned at 3202 ft. Nolf et al Nuding 1, C W½ SW NW 6-4n-14w, four miles northeast of the Olney field, had 1100 ft of oil in open hole from McClosky pay, total depth 3041 ft. The operators had not been able to obtain casing. Oil blew out of the hole on drill-stem test.

Wayne County: Bell Brothers Fuhrer 1, C W½ NE NW 33-1s-6e, rigging up standard tools to drill plug to test McClosky pay at 3158-67 ft. Aux Vases pay at 3020-40 ft showed 100 ft of oil on drill stem, open 30 minutes. Test is 6 miles south of the county's Johnsonville field. Same operators have staked location for Fuhrer 2, C E½ NW NW 33-1s-6e, and Fuhrer 3, C E½ SW SW 28-1s-6e. In the Johnsonville field Deep Oil Co.'s K. Pennington 2, C S½ NE NW 35-1n-6e, pumped 512 bbls of fluid in 12 hours from Aux Vases pay at 2992-97 ft of which 6½ percent was water. Aux Vases recently was found productive in some areas of the field. Other production there is from McClosky lime.

Hamilton County: Cherry-Kidd-Sloan's Gardener 1, SE SE NE 24-3s-7e, which extends the Mill Shoals field of White County three quarters of a mile northwest, swabbed 236 bbls of oil in 12 hours from Aux Vases at 3231-52 ft following 30-quart shot. Six other locations have been staked in the immediate area of the extension.

Lawrence County: DeKalb Agriculture Association's King 1, S½ SW NE 8-2n-12w, two miles east of old Murphy pool, cleaning and testing with 400 ft of oil in hole from sand, probably the Buchanan, at 1510-30 ft, following a 60-quart shot. J. Bauers' All State Life Insurance Co. 1, SE SE SE NW 22-2n-11w, prospective pool opener, 7 miles southeast of Vincennes, Indiana, shut down for pipe line; on swab tests of Bethel pay at 1747-58 ft the well showed for a 60- to 75-bbls producer.

Jefferson County: Carter Oil Co.'s Devonian test in Dix field, Sanders 3, C SE SE 4-1s-2e, drilling 2108 ft after coring show of oil in Aux Vases from 2012 ft; field's production at present is limited to Benoist sand.

Fayette County: Carter Oil Co.'s J. Brauer 6, SE SE 21-8n-3e, nearing Trenton, drilling at 3850 ft; slated to test St. Peter. Devonian present deepest production horizon in field. Homer Luttrell's Ford 1, NE NE NW 31-5n-3e, pool opener, completed with initial test of 41 bbls of oil and 30 bbls of water in 24 hours from Bethel at 1883½-90 ft after small shot and several squeeze jobs.

Franklin County: Carter's Sheriff 1, SW SE NW 28-5s-1e, a mile and a half north of production, abandoned at 2961 ft; St. Louis lime topped at 2955 ft; 1500 ft of salt water recovered on a drill-stem test of McClosky.

Perry County: G. H. Blankenship's George 1, NW NE SW 23-4s-1w, 6 miles north and 12 miles east of Pinckneyville, spudded. There is no production in the county.

Saline County: Magnolia Petroleum Co.'s Molinarolo 1, SE NW NE 8-8s-7e, north offset to Thompson Drilling Co.'s Reich 1, McClosky discovery, drilling below surface. Reich 1 made a small pumper but second test in area, Reich 2, by same operators, was dry.

Indiana

Posey County: Drilling plug was a prospective new pool-opener three miles east of Mt. Vernon, Haynes and Thomas and Lloyd Sloan et al Scherer 1, NE NE NW 13-7s-13w, which on drill-stem test showed 280 ft oil in 90 minutes from Tar Springs sand at 1937-49 ft. Hole is bottomed at 1954 ft. Nearest production is about four miles north in the Caborn field. Six miles west of Mt. Vernon, A. W. Cherry and Barron Kidd et al were rigging up rotary for Gyger 1, NE NE NE 7-7s-14w. Drilling at 1400 ft was Carter Oil Co. and Gulf Refining Co.'s Maier 1, C N½ NE SW 1-7s-14w, mile northeast of Mt. Vernon.

Gibson County: Apparently confirming a new McClosky pool east of Hazleton, Walter Miller's Kerr 1, NE SW NE 26-1n-10w, swabbed 325 bbls in 24 hours after 500 gallons acid in McClosky at 1737-42 ft. It is a half mile southwest of R. N. Sylvestre's Potts 1, recent McClosky discovery well which initialed about 200 bbls in 24 hours natural, without acid. Extending the Mt. Carmel pool of Wabash County, Illinois, into Indiana, Princeton Mining Co.'s Smith 1, NE NE SE 21-1s-12w, initialed 42 bbls in 24 hours on pump after 10-quart shot in Cypress.

A south offset, Smith 2, SE NE SE 21-1s-12w, was dry at 2340 ft.

Warrick County: Fishing at 700 ft was Hollingsworth's Ezell 1, NE SW SE 36-6s-8w, wildcat six miles south of Boonville.

Oklahoma

New Producing Zones Found in Three Fields

Wild gasser discovers new zone in Chickasha gas field; deep well uncovers new production and proves northern trend at Apache; new zone in Cumberland pool produces; Guthrie pool defined; New area looms for Lincoln County.

Grady County: Little Nick Oil Co.'s Glover 1, C NE NE 27-5n-8w, wild gasser which blew out October 10, has discovered a new gas for the Chickasha field; the well blew out with an estimated 75,000,000 ft gas daily at 3802 ft, regular production is Charlson sand around 5100 ft.

Caddo County: The Texas Co.'s Smith 4, NE NW NW 2-5n-12w, extended Apache field north and has proven productivity of lower Wilcox sand; drilled to 3763 ft in sand topped at 3639 ft, well flowed 540 bbls oil through 1-in choke in 4 hrs, then flowed 290 bbls in 1 hr through casing, gas estimated 1,250,000 ft daily; operator's Maynahonah 1, C SW NE Sec. 2, coring 3550 ft, after recovering 10-ft saturated core in sand, checking low to discovery.

Bryan County: The Pure Oil Co.'s 2 Little-210, SW SE NW 34-5s-7e, deepened from Bromide to 5683 ft in McLish sand, new zone for the field, flowed 112 bbls in 4 hrs through tubing choke, flow killed and crew deepening, may test Arbuckle lime.

Logan County: Continental Oil Co.'s Metzger 1, SEc NE 12-17-2w, apparently defines northwest edge of Guthrie field, test drilled to 5530 ft for salt water, no shows oil or gas.

Lincoln County: Haddock and Moore's Hert 1, SW NE SE 22-17n-3e, east of Sporn pool, topped Wilcox sand 4538 ft, drilled to 4555 ft, well blew tools up hole, made 30 bbls oil, unestimated gas before being closed in, now fishing, apparently opens new producing area.

Kansas

Forest Hills Production Extended Half Mile South

Forest Hills pool extended; Troublesome Pratt County pool opener to reacidize Viola lime; operators to reperforate Stafford duster; dry holes flourish.

Russell County: Central Petroleum Co.'s Meirer 1, CSL SW SE 14-15s-12w, extended production half mile south in Forest Hills pool, well given state potential 1536 bbls oil daily from Arbuckle lime 3334-45 ft.

Pratt County: Central Petroleum Co.'s Ward 1, SE NW 11-26s-12w, southwest of Zenith pool, perforated 4124-4138 ft, in Viola lime, hole filled 700 ft with oil and water, acidized 2000 gals, well swabbing 3 bbls oil and water hourly, operators to reacidize and attempt completion.

Stafford County: Nelson Drilling Co.'s Hitz 1, SEc NW 4-24s-12w, northwest of Stafford, plugged back to 3801 ft, top of Viola lime, and will perforate and acidize, test ready for abandonment earlier after acid in lower portion of lime zone failed to produce, slight stain found on first penetration of lime; Dines et al's Blackburn 1, NWc NE 18-24s-11w, east of Stafford, to be plugged after finding water in Viola lime, 3938-3958 ft, test carried to dry Simpson dolomite.

Graham County: Cities Service Oil Co.'s Teall 1, NWc SE 27-9s-21w, 2 mi southwest of Morrel pool, Arbuckle lime 3920-55 ft, no shows, abandoned.

North Texas

Young and Jack County Wells Flow From Bend

Natural flow recorded by Bend discoveries in Young and Jack counties. Two Montague County wildcats dry in upper Bend. Scotland deep area expanded to east. Clay County prospect to abandon.

Young County: Kerlyn Oil Co. et al's Taylor 1, SE NW BS&F Section 2, mile north Loving, flowed 45 bbls oil natural 3 hours through tubing chokes, saturation 4205-55 ft in Bend, topped 4198 ft. Partnership's Hazelton 1, SW NW TE&L Section 1995, northeast edge Loving, recently completed as discovery, pumping 15 bbls initial after nitro shot in Strawn 3384-95 ft, plugged back from nonproductive Bend 4245-4615 ft.

Jack County: Taubert, McKee and Sinclair Prairie's Mary Hoefle 1, Asbury James Survey, 4 miles southeast Antelope, flowed by small heads natural into pits after drilling plugs, erecting storage. Production from saturation 4817-35 ft in Bend, topped 4794 ft. L. T. Burns et al's Wright 1, Z. S. Brooks Survey, and 5½ miles northwest of above discovery, awaiting orders at 6000 ft, having logged top Bend 4908 ft, first Mississippian 5921 ft, and Ellenberger 5975 ft. Magnolia's Borden 1, projected Ordovician test for northeast corner Jack County, resumed drilling after cleaning up fishing job at 6022 ft.

Montague County: Continental Oil Co.'s Winder 1, 2 miles east of Stoneburg, logged dry Bend lime 6039-59 ft, and some saturation in core 6059-61 ft. Benson Bros. and Omohundro Drilling Co.'s Riley 1, 3 miles northwest Sunset, drilling shale 5895 ft in Bend, topped 5745 ft. Chapman, McFarlin et al's Fowler 1, 2½ miles east by north of Ringgold production, recementing bottom-hole plug to test Strawn oil sand 4840-47 ft, having proved dry in Ellenberger 5831-6008 ft.

Clay County: Sinclair Prairie's Scheer 1, 1½ miles south Henrietta, scheduled to abandon at 6459 ft in Ellenberger, topped at 6363 ft. Mississippian entered at 6123 ft, and followed by dry Simpson at 6160-6363 ft.

Archer County: R. H. Hawn et al's Edwards-Texaco 1, east outpost Scotland 3-pay area, flowed 27 bbls oil 3 hours, used acid through perforations 5224-55 ft in Bend, topped 5224 ft. Proved dry in Mississippian 5575-5621 ft. Recorded sharp dip in Bend structure, discounting possibility pool expanding any appreciable distance to east. Phillips Petroleum Co.'s Reilly-Pendery 1, Ordovician wildcat on west side county, drilling 5150 ft.

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West Texas

Flow of 9770 Barrels From Ellenberger at Sand Hills

Ellengerber yields another big producer in south extension Sand Hills field. Pay section in South Apco pool, Pecos County, thinned by abnormally high granite, and shallow pay for Conry-Davis found by second test. Extremely hard chert may cause halt on several deep wildcats.

Deep Projects: Plymouth Oil Co.'s Alford 1, eastern Upton County wildcat, drilling hard chert 10,028 ft, and Magnolia's Walton-State 20, Winkler County, also in same formation 8420 ft. Latter is believed to be in Silurian, while Alford 1 is in unidentified Pennsylvanian. In southern Mitchell County, Humble's Ellwood 1 was drilling sandy-shale 7085 ft. Shell's Sealy-Smith 1, northern Ward County prospect, drilling 6350 ft. The Ordovician is the objective of this group.

Wildcats: Honolulu Oil Corp.'s Wright 1-13, eastern Yoakum County, changed to cable tools at 5262 ft to deepen, with 5½-in at 5183 ft above broken saturation. Ray Albaugh et al's Handley 1, Dawson County, cemented 5½-in 4776 ft, total depth 4977 ft, awaiting machine to test. L. C. Harrison et al's Nairn 1, recent initial oil strike for Lubbock County, awaiting pumping equipment after nitro shot and acid in middle Permian 4893-5002 ft failed to register flowing production. Harrison and Tobe Foster's Steck 1, 4 miles west by north of latter discovery, drilling 3780 ft.

South Apco: Anderson-Prichard Oil Corp. and Monte Warner's Boren 2, ¼ mile south of their prolific Ellenberger producer at 4668-4791 ft, tested dry on drill-stem test 4716-90 ft, with the hole bottomed in granite. Top Ellenberger called 4737 ft, elevation 2471 ft. Partnership's Boren 3, ¼ mile west latter, cemented 5½-in 4738 ft, with hole bottomed in granite 4958 ft. Thin section

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saturation logged in Ellengerber, topped 4760 ft.

Crane County: Gulf's Waddell et al 29, offsetting trio of prolific Ellenberger wells on south end Sand Hills deep area, earned rated initial 9770 bbls 38.4-gravity oil and 15,623,000 ft gas, based on 6-hour open flow, acidized dolomite 5625-47 ft in Ellenberger, topped 5494 ft, elevation 2466 ft, with 5000 gals. Continental's Jones 1, 1½ miles south of this Ellenberger production, resumed drilling at 6004 ft to explore the Ellenberger after indicating 100-bbl oil well in Simpson, topped 5545 ft, elevation 2474 ft. This Simpson section is not present in the narrow line of deep wells in the south portion of Sand Hills, and may be attributed to a fault.

Pecos County: Magnolia and Geo. Abell's Myrick-State 1-B, south offset 3800-ft oil production in Conry-Davis pool, enhanced prospects of upper Permian production in yielding 1000 ft oil and 270 ft oil- and gas-cut mud when tester was used at 2255-2308 ft. Additional cores revealed broken pay to 2324 ft followed by water sand, and the test was drilling at 2660 ft to try for completion in 3800-ft pay. This shallow zone was recently uncovered by The Texas Co.'s Williams 1, which flowed on drill-stem test at 2210-2375 ft, elevation 2375 ft. Protection string of 7-in at 2411 ft was landed by latter.

Magnolia's Francisco 1, near southeast edge Abell pool, flowed initial rate 1783 bbls 44.6-gravity oil ½-in tubing choke natural from McKee sand 5090-96 ft in Simpson, topped 4870 ft, elevation 2392 ft. Official gauge of several recent completions postponed in anticipation of early completion of The Texas New Mexico Pipe Line Co.'s outlet, the first for the area. Work on the line has been delayed by repeat floods in Pecos River bottoms.

Stephens County: Christie Brothers et al's H. M. Donnell 1, mile east of prolific oil production developed in 1925 in 3100-3200-ft lime, rated at 15,000,000 ft gas with 30 barrels distillate daily from sandy-lime 3887-90 ft. Test originally drilled by Cox and Caprito to 3270 ft and abandoned, and located 400 ft from east and 2900 ft from north lines TE&L Sec 1208. Helmerich & Payne's Smith 1, NEc TE&L Sec 1405 and adjacent to depleted wells drilled in the early 1920's, abandoned 3279 ft after yielding small volume oil.

Taylor County: Hedrick Oil Co.'s Arrant 1, 3 miles northwest Abilene, abandoned 2504 ft. Ungren & Frazier et al's Trinity University 1, SWc Lot 2, Grimes CSL, 3 miles northwest of Merkel 2-pay area, drilling shale 2745 ft, elevation 1750 ft.

Somervell County: M. E. Davis and Plymouth Oil Co.'s Cousins 1, 2 miles south Glen Rose, drilling dry dolomite 5695 ft in Ellenberger, topped 5455 ft.

East Texas

Third Producer Completed in Woodbine

Rusk County faulted structure completing third oil producer in Woodbine. Another prospect near Bazette Townsite dry, and 2 projected lower Marine wildcats abandoned in Paleozoic. Southwest extension Cayuga deep area responds to acid with gas-distillate flow.

Rusk County: L. O. McMillan et al's Strong & Pool 2, southeast offset new Salem pool discovery, showing for oil producer from Woodbine 4064-67 ft. Area has two wells on production, and four failures.

Navarro County: J. B. Daniel et al's Mills 1, half mile east of Bazette, awaiting orders after testing dry in Woodbine 3090-3165 ft.

Lower Marine Projects: Magnolia's J. N. Henry 1, wildcat in west central Red River County, encountered quartzite at 4747 ft, with the lower section of Trinity absent, and was abandoned at 4788½ ft. Massive anhydrite was called at 3297-3345 ft. In western Limestone County, J. E. Farrell and Frank Bryan's Gilliam 1, J. S. Spencer Survey, was awaiting orders after yielding fresh water on drill-stem tests in Pettit at 3640-3715 ft and in Travis Peak 4145-4248 ft, having plugged back from schist at 4867 ft. The thick section of Lower Marine to the east by south was found to be cut out.

Limestone County: Bert Weekley et al's Barron 2-A, south outpost for Barron deep gas-distillate pool, declined in flow to 6 bbls oil and 39 bbls water daily ¼-in tubing choke. Production from Pettit 5686-5785 ft, treated 4000 gallons acid.

Cayuga Deep: Amerada's Berk 14, first deep test for Freestone County sector, showing for prolific gas-distillate producer in Lower Glen Rose, acidized 8000 gallons through perforations 7430-7614 ft, total depth 7646 ft. No gauge taken, as well cleaning itself through varied chokes. Pressure buildup overnight to 2100 pounds on tubing and 1900 pounds on casing. Field has 5 gas-distillate wells and small oil producer from this horizon.

Southwest Texas

New Producer Extends North LaWard Field

A 9000-foot southwest extension to the newly discovered North LaWard field of Jackson County, highlighted exploratory activity in Southwest Texas during week. Several minor field extensions were provided in scattered areas.

Lower Gulf Coast: H. Merlyn Christie's M. Pickering 1, blk 25, 2 mi sw Moore & Ahern's disc N. LaWard fld, Jackson County, perf 5210-18 ft flowed 162.12 bpd 25 gr plo 9/64 ch 575 lbs tp, 650 lps cp. Second well in fld and abd flat with disc. Active drilling campaign assured.

Mayo & Boyle's 1st Nat'l Bnk of Georgetown, 3 mi n Vanderbilt, Jackson County abd 6005 ft, elec log indicated snd o show 4915 ft but not tested.

George Buescher et al's J. R. Knight 1, n offset Petronilla fld disc, Nueces County, cut fault 500 ft higher than first well, crd same sds & set 7 in cas 7365 ft. Will comp thru perf in 6900-ft snd in line with plan to develop multiplicity of prod zones. Dst 6960-65 ft using 1600 ft w cushion ½ & ⅜ ch, 15 min, rec w cushion, 850 ft 42 gr plo, 15 lbs, BHP 2950 lbs f, 3500 lbs si. Also, oil show 7300-ft snd.

Sam E. Wilson, Jr. & Gulf Plains Corp.'s San Antonio Joint Stock Land Bank 1, w outpost Agua Dulce, Nueces County, cor below 7950 ft. Several more lcns made on w side fld, some across line in Jim Wells County.

Osborn & Mid-Continent's Grove 1, second well on N Banquette structure, Nueces County, coring for 6700 ft snd, prod in Burow 1, flowing 72 bpd 58 gr dist and sufficient gas to supply boilers on dr well.

Kilgore Dev, Inc.'s Kuck 1, ½ mi s Orange Grove fld, Jim Wells County, perf 5075-77 ft, fld 136 bpd 32 gr plo o ⅛ ch 1225 lbs tp, 1825 lbs cp, gor 720-1. Extends fld.

Magnolia Pet. Co. staked two lcns w flank LaGloria fld, Jim Wells County, to outline crude prod established by D. O. Maun 2 at 6670-6700 ft.

Gust Tsesmelis' Joseph 1, 2½ mi s Camada fld, Jim Wells County, logged sd & sdy sh with oil show 5756-68 ft, several tests failed, testing again. One test showed 1250 lbs but tool slipped.

Mirando District: Humble O&R Co.'s Welder 1-E, sur 224, 13½ mi nw San Diego, Duval County, on hot pros, abd 4315 ft no shows in Cockfield. Skidded 1630 ft e-se for Welder 2-E.

Hiawatha O&G Co.'s Herberger 6, ¾ mi s outpost Sweden fld, Duval County, cor Jackson series below 4725 ft.

Rio Grande Valley: Humble, Sun, Navarro, Royal O&R Corp., expanding Kalsey fld farther sw in Starr County with series 4750-ft tests. Humble developing new 4950-ft snd at ne side same fld, Brooks County.

W. R. Davis, Inc.'s Jackson-Harrison 1, 15,000 ft nw Davis' Arizona et al 1 extension dist prod McAllen fld, Hidalgo County, ru for 8500 ft test.

Wilcox Trend: Shell Oil Co.'s McManus 1, Brushy Crk pros. Lavaca County still testing, reported flow est 10 to 15 bph 33 gr blk o 5/32 ch fr pb td 9634 ft in Wilcox. May open fld.

Normandie Oil Co.'s Smolik 1, s Halletsville,, Lavaca County, dr 7500 ft in Wilcox top 6020 ft, will go to 8500 ft.

Texas Gulf Coast

Lake Creek Well Drills Deeper in Wilcox

Deep Wilcox well in Montgomery County continues to drill; new field indicated in Brazoria County.

Montgomery County: Although full information has not been released, Superior's 1-B McWhorter at Lake Creek is reported to be largest Wilcox discovery in Texas. Well already is deepest ever drilled in Wilcox and deepest of any well on upper Gulf Coast. Log was run to 13,000 ft, said to show hundreds of feet oil sand. Present depth is around 13,216 ft. Operators recovered drill stem dropped at 13,092 ft.

Glenn H. McCarthy's Seyle 1, West Magnolia area, flowed 6.55 bbls per hour thru ¼-in choke from perfs 8848-58 ft, gr 51.1. Operators reported planning second well west of discovery, opens gas-distillate field.

Atlantic's Foster Lumber Co. 1, Fostoria area, drilling below 11,124 ft after 8600 ft protection pipe cemented.

Brazoria County: Humble's Houston Farms Development 1, Rattlesnake Mound area, set production pipe after logging sand showing oil and gas 6825 ft, sand showing oil 7135 ft. Well bottomed 7234 ft, located on 6816-acre tract in Perry & Austin sur, abst 108.

Skelly's Vieman 1, Flag Pond prospect, has been shut down repairing rig, no shows reported, td 9957 ft.

Polk County: Pan American's Goodrich Community 1, Goodrich prospect,

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IOWA
Chariton
Clarinda
Creston

KANSAS
Arkansas City
Chanute
Eldorado
Great Bend
Herington
Hutchinson
Independence
Lyons
Marion
McPherson
Newton
Oxford
Russell
Wichita
Winfield

LOUISIANA
Crowley
Houma
Lafayette
Lake Charles

MISSOURI
Bethany
Kansas City
Maryville
St. Joseph
St. Louis
Trenton

MONTANA
Billings
Great Falls
Lewistown
Shelby
Winnett

NEBRASKA
Falls City

N. MEXICO
Artesia
Farmington
Gallup
Hobbs

OKLAHOMA
Ada
Altus
Ardmore
Bartlesville
Chickasha
Duncan
Edmond
Elk City
Enid
Guthrie
Muskogee
Oklahoma City
Okmulgee
Ponca City
Seminole
Tulsa

TEXAS
Alice
Amarillo
Big Spring
Borger
Breckenridge
Brownwood
Corpus Christi
Corsicana
Dallas
Electra
Fort Worth
Gainesville
Galveston
Henrietta
Holliday
Houston
Longview
Marshall
McAllen
McCamey
Mexia
Midland
Mineral Wells
Nocona
Odessa
Olney
Pampa
San Angelo
San Antonio
Seagraves
Sweetwater
Tyler
Wichita Falls

UTAH
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Inc
HOUSTON U.S.A. TEXAS

tested salt water on drill stem 3977-94 ft in Cockfield, 22 min thru ¼-in choke. Test recvd 2 stands gas cut mud and bubbles of oil, 14 stands salt water, ran log 4104 ft, WOO. Pan American's Texas Long Leaf 1, 1 mi se Community 1, drilling below 9571 ft after sidetracking junk.

Harris County: Ralph A. Johnston's Cockburn 1, Almeda area, near 7500 ft contract after picking Frio 5660 ft and running log 7241 ft, no shows.

Grubb & Hawkins abnd Buxbaum 1, Westfield area, no shows in Cockfield-Yegua section.

Fort Bend County: Jack Frazier, Ray Ranger et al Mason Briscoe 1, Fulshear area, drilling below 7246 ft, no shows reported, Dis.-Yeg. 7085-7107 ft.

Providence & Federal Royalty's Hruzek 1, west of Orchard, standing around 8574 ft, no shows.

Repressuring Authorized

A reduction in the gas-oil ratio from 10,000/1 to 2,000/1 in the Lovell Lake field, Jefferson County, was ordered last week by the Texas Railroad Commission, effective January 1, 1941. A separate order authorizes Humble Oil & Refining Company to operate a pressure maintenance project taking gas from the 7720-foot horizon and returning the residue to the gas cap.

South Louisiana

New Sand Tested In Erath Field

Texas Company tests new sand in Erath field, Vermilion Parish, Napoleonville Dome wildcat proves disappointment, abandoned; Wilcox test planned in Hamburg area, Avoyelles Parish.

Vermilion Parish: Texas has opened new sand in Erath field, R. S. Henry Est. 1, flowing 370 bbls 58-gr distillate daily thru 10/64-in choke from perfs 8715-60 ft. Well, bottomed 11,599 ft, best completed in field so far. Gas-oil ratio is low.

Assumption Parish: George Echols & J. Ray McDermott's Armelise Planting Company 1, sec 14-12s-13e, Napoleonville Dome area, abnd after testing between 8300-8400 ft. Sand 8735-39 ft failed, td 8897 ft. Operators reported will drill another deep test farther out on east flank. Echols reported to have taken Shell acreage on south flank Bayou Blue field, Iberville Parish, sec 75-9s-10e, for 9000-ft test.

Tide Water Associated has assembled approximately 6000 acres north of Thibodeaux, Assumption and LaFourche parishes. Block originally held by Humble, 2 deep dry holes drilled on prospect.

Avoyelles Parish: J. A. Hafner, Houston, plans 8500-ft Wilcox test in Hamburg area, SW¼ of NW¼ of sec 23. Texas Company and Continental are supporting test, having taken 10-year leases 5 years ago. Prospect worked by gravitymeter, torsion balance. Wilcox expected around 6800 ft. Nearest production is Lake Larto with around 6500 acres in block.

Jefferson Davis Parish: Cities Service has located Lacassine Land Company 1, 10,500 ft test Thornwell area, 5000-acre block worked with geophysics 5 months ago.

T. J. Markley will test Niblett Farms 1, wildcat drilled by Continental. Operator optioned 12,000 acres around well for new test, but will retest 8500 ft zone in old wildcat. Acreage in twp 11s, rge 5w, well located center SW¼ of NE¼ of Sec 1. Total depth was 11,748 ft; it produced 105 bbls oil 15 hrs thru ¾-in choke perfs 11,604-620.

St. Martin Parish: Davis & Co.'s Voorhies 3, east flank Anse la Butte field, drilling 9347 ft, no shows reported. Reports say deal is pending on Davis property if new well is producer.

Wilcox Tests: New wells planned for Catahoula Lake prospect, Avoyelles and Rapides parishes. H. L. Hunt in sec 18-3n-6e, Carter in sec 4-3n-5e and Union Sulphur in sec 3-4n-5e on W. R. Davis acreage.

North Louisiana

Field Work Declines From Recent Peak Period

Completions and locations in North Louisiana drop from high mark of last two weeks; new locations in "Olla Trend"; deep wildcat runs into trouble.

New Wildcats: New wildcat locations for "Olla Trend" staked in Catahoula, Winn and Tensas parishes with reports of others planned in Winn Parish. Carter Oil Co. will drill Grace Rhodes 1, NE NE 29-9n-10e, Tensas Parish; H. L. Hunt will drill Goodpine F-13, C NW NW 19-11n-4w, Winn Parish; and H. H. Schoffield will drill Davis 1, C SE SE 1-4n-5e, Catahoula Parish. Carter reported planning two wildcats soon near Beech Springs, Winn Parish.

Deep Wildcat: H. L. Hunt was cutting out hung drill stem at Louisiana Central A-2, SE NE 9-9n-6e, Catahoula Parish, below 8900 ft, deepest wildcat drilled in Olla trend.

Shelby County, Texas: Ce-Beth Oil Co.'s Pickering 1, G. H. Patterson Survey, Shelby County, Texas, seven miles south of Joaquin, drilled to 3343 ft and plugged back and perforated at 1475-1510 ft in Taylor marl, well being standardized produced 50 bbls 39.8-gravity oil in 24 hours and same amount of salt water.

Arkansas

Dorcheat Edge Well Flows Ten Barrels Oil Per Hour

Edge well in Dorcheat distillate field flows oil; second distillate well for Macedonia; effort to extend Urbana fails; new Smackover lime test planned.

Dorcheat: Arkansas Fuel Oil Co.'s Barton 1, C NW NE 14-18-22, east edge well at Dorcheat, Columbia County, which has yielded hitherto distillate wells, makes 10 bbls 41- to 43-gravity oil per hour, 5/32 in choke, 8900 ft, Smackover lime; elevation 265; Buckner 8778; Smackover 8818; porosity 8827 ft.

Macedonia: West offset to discovery completed as second producer at Macedonia, Columbia County. McAlester Fuel Co.'s Nipper 1, C S½ SW 16-18-21. 8990 ft, flowing 20 bbls white distillate per hour through 10/64-inch choke. Elevation, 314 ft; swabbed salt water in Smackover lime; plugged back to Buckner, producing level discovery well; top

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Buckner 8754 ft; Smackover lime, 8848 ft. Four other tests drilling.

Urbana: Effort to extend Urbana field Union County fails, when Marine Oil Co. et al's Cordell 1, NW SW NW 5-18-13, dry 3580 ft, elevation 171 ft; between Urbana and Lawton.

Smackover Test: J. R. Lockhart's Newsom 1, SE NE SE 19-17-13, Union County, rigging for test of Smackover lime.

Mississippi

Sharp Drop in Drilling Activity at Tinsley Dome

Drilling falls off sharply in Tinsley Dome, with only two new locations, one completion for week; two Tinsley Dome locations abandoned; one wildcat location staked, with two others tentatively made.

Wildcats: New wildcat location staked by Henderson Oil Co. at J. M. Dotson 1, SW SE SW 12-19n-6e, rig. Tentative wildcat locations: Urban Hughes, Section 15-3n-1e, Wilkinson County, for Wilcox test; and John D. Golson in Section 31-9n-6w, Issaquena County. Stone County wildcat abandoned at 8505 ft. Much leasing in Wilkinson and Jefferson counties, southwest Mississippi. Also 440 acres leased Edwards Salt Dome, Hinds County.

Alabama: Union Producing Co.'s Waite 1, C NW 27-8n-1w, Clarke County, Alabama, reams to bottom at 12,205 ft.

California

Shallow Fresno Wildcat Better Than 100 Barrels

Shallow Fresno County test makes discovery while Kerman-Raisin City area extended; second completion in Union Avenue area, Kern County; wide leasing activity in Hanford area, Kings County.

Fresno County: Discovery of a new shallow producing area in the Jacalitos Hills area, Fresno County, Section 26-21-15, appears to have been made by Wilshire Annex Oil Co. in No. 33-26E wildcat, which has been completed with rated potential of 100-150 barrels daily, 36.8-gravity clean oil. Bottomed at 3905 ft, production is being obtained from about 50 ft of formation.

A westerly extension of Kerman-Raisin City producing area appears to have been made by Seaboard Oil Corporation with S.T.U. 88-13, outpost in Section 13-15-17 which cored well saturated and extremely permeable oil sand between 5122 and 5138 ft. Formation test on interval was inclusive due to mechanical difficulties but operation recovered 2500 ft of fluid, including 2160 ft of clean 25-gravity oil. First oil streaks were placed at 4640 ft, gas zone at 4985 ft, and dark oil sand at 5012 ft.

Kern County: Hancock Oil Co. appears to have a commercial producer in its second test of the Union Avenue area of Kern County where Roberts No. 2, Section 6-30-28 has been completed producing 140 barrels daily, 26-gravity oil, cutting 8 percent water and emulsion. A third well will be drilled in immediate area shortly, company states.

Kings County: Intensive leasing activity in the neighborhood of Township 18, Range 22, Hanford area, is current with participating companies including Universal Consolidated Oil Co., Shell Oil Co., Continental Oil Co., Standard Oil Co. of California, Hancock Oil Co. and Western Gulf Oil Co.

Ventura County: Oilexco, Inc., has abandoned its four core holes in the Eureka Canyon area, three of which were drilled in 2-3-18 and one in 34-4-18.

Michigan

Reed City Extended Another Mile North

Reed City field extended mile north to prove up total 6-section area in pool.

Reed City: Gulf Refining Co.'s Truax 1, C S½ NE NE 19-18n-10w, Osceola County, completed for natural estimated Monroe lime potential of 1800 bbls day flowing 315 bbls first 3 hours on test at 3605 ft. Well extended proven area mile north to proving up pool 3 miles wide north-south and minimum 2 miles east-west. Truax 1 was 50 ft lower on producing horizon than the highest well in the field to show more producing closure than had been earlier expected.

Wildcats: Ohio Oil Co.'s Peiser 1, C S½ NW SW 6-18n-11w, Lake County, 7 miles northwest Reed City producing area, logged Dundee-Monroe at 3493 ft, and shut down at 3635 ft with 1000 ft water and 200 ft oil.

W. P. Shoemaker's Smith 1, SE NW SE 17-19n-14w, Lake County, wildcat, logged Monroe at 2781 ft, carried a show of oil and gas at 2832 ft.

New Mexico

Eddy County Wildcat Seeks Additional Pay

Eddy County wildcat seeking additional pay after flowing by heads natural. Water level established in Salt Lake pool, Lea County, and two wells on pumping test. South Lovington pool extended to southwest.

Eddy County Wildcat: Nay Hightower et al's Grier 1, C NW NW 31-16s-31e, 3 miles north of Jackson pool, drilling shale 3085 ft after flowing 75 bbls oil daily by heads from 3062-72 ft.

Lea County: Harry Leonard and Van Welch's State 2, south offset Salt Lake pool discovery, established water level at 3099-3104 ft, then plugged back to 3065 ft to test upper shows. Partnership's State 3, east offset discovery, pumping 2 barrels oil hourly from 3040-84 ft, total depth 3100 ft. Continental et al's Brooks 1-A, north offset discovery, installing pumping unit with 525 ft oil in hole from broken pay, total depth 3110 ft, elevation 3533 ft.

South Lovington: Magnolia's State 3-R, southwest outpost, flowed 35 bbls oil 8 hours for completion, shot with nitro 4940-80 ft.

Lea County Wildcat: Culbertson & Irwin, Inc.'s Wingfield-Texaco 1, 4½ miles south Carbin pool, plugging back to test upper shows after flowing water from lime 4480-90 ft.

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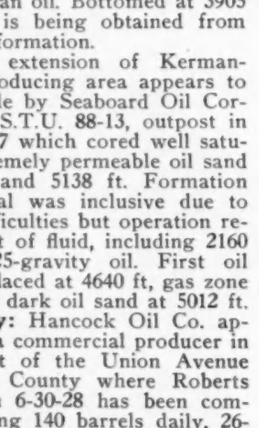

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UNITED STATES WELL COMPLETIONS

Company, Well and Location	Init. Prod. Bbls.	Depth

Arkansas

Columbia County (Dorcheat)—
Ark. Fuel Oil Co., Barton 1, 14-18-22 ..... 240 8900
Columbia County (Macedonia)—
McAlester Fuel Co., Nipper 1, 16-18-21 ..... 480 8990
Columbia County (Stephens)—
Crow Drlg. Co., Smart 2, 12-15-20.. 275 3406
Fitzwater & McClerkin, Allen 1, 14-15-20 ..... 35 3424
LaFayette County (Buckner)—
G. Scott Hammond et al, McKean 1, 7-16-22 ..... 480 7258
Lee County (Wildcat)—
S. A. Thompson, Comer 1, 17-3n-2e * 3807
Miller County (Fouke)—
Carter, Sturgis B-2 ..... 54 3750
Nevada County (Troy)—
Berry Asphalt Co., Grove 3, 4-14-20 25 1173
Union County (Urbana)—
Marine Oil Co. et al, Cordell 1, 5-18-13 ..... * 3580
Roberts & Murphy, Parker 1, 3-18-13 ..... 10 3569

OLD WELL DEEPENED

Ouachita County (Smackover)—
Texas Co., Solmson B-7, 32-15n-16w (otd 2261) ..... * 2667

California

Fresno County (Northeast Coalinga)—
Standard, No. 67-19B.....1782 8207
Kern County (Elk Hills)—
Standard, 76-33S 500 3175
Kern County (Kern Front)—
General, Young 12..... 17 2022
Kern County (Midway-Sunset)—
H & T Oil Co., No. 2..... 90 1294
Kern County (Mount Poso)—
Ring Oil Co., Knapp 6..... 35 1495
Shell, Vedder-Rall 20..... 300 1986
Kern County (Ten Sections)—
Shell, KCL A-77-30..... 426 8210
Kern County (Union Avenue Area)—
Hancock Oil Co., Roberts 2..... 140 5203
Los Angeles County (Dominguez)—
Shell, Reyes 126..... 105 4195
Union, Callender 84..... 720 7075
Los Angeles County (Inglewood)—
Standard, Vickers 2-13.....1154 8401
Los Angeles County (Long Beach)—
Victory Oil Co., Dominguez 3-19... 66 8402
Los Angeles County (Rosecrans-Athens)—
Southern Calif. Pet. Corp., St. Anthony B-1 ..... 85 8226
Los Angeles County (Wilmington)—
Union Pacific, UP 203..... 322 3667
Orange County (Huntington Beach)—
Signal O&G Co., Signal-Bolsa 32B 536 2910
Santa Barbara County (Santa Maria Valley)—
Pacific Western Oil Co., Carranza 4 650 5120
Union, Le Roy 7..... 439 5504
Vincent 7 .....1451 4543
Ventura County (Rincon)—
C-C-M-O Co., Hobson C-9..... 110 9337

OLD WELL DEEPENED

Los Angeles County (Long Beach)—
Shell, Nesa 7 (otd 4514)..... 95 6705

Illinois

Clark County—
Rosa M. Plost, Slater 5, nw sw se 25-10n-14w 27 1599
Clay County—
Pure, Smith 4, c w½ sw se 17-2n-8e ..... * 3080
Rogers 2, c e½ sw se 18-2n-8e.. * 3080
Clinton County—
T. H. McCullough, Coe 1, nw sw sw 14-1n-1w 110 1448
Texas, Grey 1, s½ nw se 35-3n-2w.¶17.5 2684
J.D. Finley et al, Bennett 1, ne se ne 36-3n-2w ..... * 1325
Edgar County—
Vestern Leonard, Baker 1, w½ nw nw nw 19-15n-13w ..... * 960
Effingham County—
C. N. Pearson et al, Buckholz 1, e½ se ne 27-6n-5e ..... * 2319
A. J. Hammer, Birch 1, nw nw nw 34-6n-5e ..... * 2461
Fayette County—
Joe Longoria, Braasch 2, n½ ne ne sw 1-5n-2e ..... * 1810
Carter, Mills 1, ne ne ne se 19-7e-3e .....Wt. Disp. 1356
Brauer 5-D, c ne se 21-8n-3e... 250 3084
Ireland 15-D, c w½ nw nw 33-8n-3e 200 3074
Franklin County—
Smokey Oil, Crawford 1, c n½ s½ nw ne 23-6s-2e 67 2121
Adkins, Lager 6, sw se ne 35-6s-2e 150 2152
CW&F Coal "W" 8, sw ne sw 36-6s-2e 96 2128
CW&F Coal "W" 10, nw nw sw 36-6s-2e 130 2146
Kewanee Oil, Flannigan 2, se sw ne 14-6s-5e 516 3175
Hamilton County—
Kingwood, Johnson 4, sw se ne 14-6s-5e 168 3158
Dodd 8, sw sw nw 6-6s-7e 285 3012
Shell, Daily 1, se ne ne 12-6s-6e .. 199 3017
Daily 2, ne se ne 12-6s-6e..... 362 3028
Daily 3, ne ne se 12-6s-6e..... 400 3038
Cameron Oil, Kern 7, se sw sw 7-6s-7e 240 3033
Pure, Cuppy 17, sw ne sw 6-6s-7e. 170 2997
Cuppy 16, ne nw nw 7-6s-7e.... 35 3000
Kimrey et al 3, nw se se 7-6s-7e 72 3147
Texas Co., Johnson 6, nw ne se 7-6s-7e 168 3018
Jackson County—
Charles Mercer et al, Williams 1, ne ne ne 9-8s-1w..... * 2330
Jasper County—
Pure, Richards 2, c w½ se se 7-5n-10e 1142 2860
Ella May "A" 3, nw nw ne 8-6n-10e 190 2790
Ella May "A" 4, sw nw ne 8-6n-10e 402 2790
Kessler "A" 1, c e½ ne sw 15-6n-10e ..... * 2833
St. Marys Consol. 1, c w½ ne se 33-6n-10e 195 2835
Sinclair-Wyoming, Freeman 1, e½ nw sw 15-6n-9e ..... * 3131
Jefferson County—
Magnolia, Rynski 2, se ne se 34-2s-1e 41 2016
Shell, Burkhurst 5, se nw ne 35-2s-1e 134 1990
W. C. McBride, Inc., Piper 2, ne sw sw 36-2s-1e 520 1981
Texas, Wood 1, nw se sw 36-2s-1e 104 1989
LaSalle County—
A. Hanna, Sage 1, s½ se se 8-32n-2e ..... * 445
Marion County—
Ohio Oil, M. Young Hrs. 52, c ne sw 20-2n-2e .....Input 1874
Richland County—
Arrow Drlg., Bunch 1, c w½ se ne 8-2n-14w 111 3167
Ohio Oil, Koertge 3, c s½ sw nw 29-2n-14w 824 3136
Sinclair-Wyoming, Clodfelter 2, c s½ ne sw 29-2n-14w 1871 3117

[*Continued on next page*]

*Failures; †Junked; ¶Million cu. ft. gas.

Summary of Drilling Operations in the United States, Week Ended October 18, 1941

	WELLS COMPLETED								[1]PERMITS FOR NEW WELLS				
	Total for Week	New Wells Drilled for Oil and Gas: Oil Wells	Gas Wells	Failures	[3]Miscellaneous	Initial Production	Total 1941	Total this Date 1940	This Week	Total this Month	Total 1941	Total this Date 1940	Year Total 1940
Alabama	.....	.....	.....	.....	.....	.....	2	8	.....	.....	.....	.....	.....
Arkansas	11	8	.....	2	1	1,599	144	153	4	13	150	125	153
California	20	19	.....	.....	1	9,023	937	911	19	60	944	847	1,042
Colorado	.....	.....	.....	.....	.....	.....	15	7	.....	.....	.....	.....	.....
Florida	.....	.....	.....	.....	.....	.....	1	1	.....	.....	.....	.....	.....
Georgia	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....
Illinois	82	62	1	16	3	35,089	3,160	3,262	95	309	3,850	3,733	4,532
Indiana	12	3	2	6	1	274	431	394	13	47	[2]206	.....	.....
Iowa	.....	.....	.....	.....	.....	.....	5	.....	.....	.....	.....	.....	.....
Kansas	59	40	5	10	4	41,747	1,831	1,627	62	167	1,904	1,651	2,048
Kentucky	3	2	.....	.....	1	48	267	286	8	27	[2]139	.....	.....
Louisiana	23	15	4	4	.....	3,209	1,225	1,365	43	113	1,424	1,354	1,658
Michigan	29	14	2	13	.....	20,620	678	988	32	84	739	929	1,093
Mississippi	2	1	.....	1	.....	885	166	153	.....	.....	.....	.....	.....
[1]Missouri	2	.....	.....	2	.....	.....	62	22	.....	.....	9	15	26
Montana	.....	.....	.....	.....	.....	.....	170	153	.....	.....	.....	.....	.....
[1]Nebraska	2	2	.....	.....	.....	411	76	19	1	6	88	33	69
New Mexico	8	8	.....	.....	.....	2,238	308	540	7	20	327	483	559
New York	31	16	.....	.....	15	123	789	819	.....	.....	.....	.....	.....
Ohio	52	11	25	12	4	208	1,404	823	.....	.....	.....	.....	.....
Oklahoma	57	25	8	16	8	6,759	1,779	1,720	64	183	1,889	1,495	1,888
Pennsylvania	63	41	11	2	9	55	3,176	2,944	.....	.....	.....	.....	.....
South Dakota	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....
Tennessee	.....	.....	.....	.....	.....	.....	16	8	.....	.....	.....	.....	.....
Texas	182	133	5	43	1	90,144	8,367	8,136	105	579	9,767	9,173	11,170
Utah	.....	.....	.....	.....	.....	.....	3	3	.....	.....	.....	.....	.....
West Virginia	24	3	11	7	3	9	553	478	.....	.....	163	648	782
Wyoming	.....	.....	.....	.....	.....	.....	.....	125	.....	.....	.....	1	1
Total this week	662	403	74	134	51	212,441	25,708	24,946	453	1,608	21,599	20,487	25,021
Total last week	788	540	53	167	28	245,037	25,023	24,374	740	1,155	21,146	.....	25,021
Total this year	25,708	15,664	1,971	5,601	2,472	7,160,163	.....	.....	.....	.....	.....	.....	.....

[1] This tabulation includes those states where weekly data are available; figures for Missouri date from August 10, 1940; Nebraska from August 3, 1940.
[2] No data available before June 14, 1941.
[3] Includes old wells deepened, water-intake, gas input, and salt water disposal wells.

United States Well Completions—*Continued*

ILLINOIS—Continued

St. Clair County—
Ed Gieck, Frees 1, n½ n½ ne ne 13-2s-8w ..... * 465
Wabash County—
Shell, Kolb 1, ne sw nw se 18-1s-12w 30 2066
Dean & Mortin, Goodart 1, w½ sw nw 21-1s-12w 80 1995
1st Nat. Pet. Trust, Samuels "A" 2, se ne sw nw 21-1s-12w ..... * 2348
Samuels "C" 3, Lot 170, 21-1s-12w 12 2003
Lavender & Hayes, Dardeen 1, Lot 3 21-1s-12w 25 2002
Wayne County—
Pure Oil, Garrison Consol. 3, c e½ sw se 36-2n-7e 88 3048
Olson, States 1, c e½ ne sw 36-1n-6e 200 3248
United Prod., Schell 3, c s½ sw nw 35-1n-6e 272 3240
Hale 3, c n½ ne nw 33-1n-6e.... 254 3215
Hale 2, c s½ nw ne 33-1n-6e.. 900 3238
Texas Co., Sweeney 1, c n½ ne se 34-1n-6e 2347 3115
Leathers 8, c n½ sw nw 27-1n-6e 109 3268
Greathouse 4, c s½ nw ne 27-1n-6e 2413 3107
Wiser Oil Co., Lowe 2, c s½ sw ne 33-1n-6e 2600 3215
Matchett 3, c n½ ne ne 27-1n-6e. 4800 3178
Matchett 2, c s½ ne ne 27-1n-6e. 3600 3142
Carter Oil, Matchett 1, c s½ sw ne 27-1n-6e 3177 3071
Curtis & Brown, Watson 2, c n½ sw nw 26-1n-6e 3000 3148
Jablonski & Schulette, Tennery 1, c s½ se nw 21-1n-6e ..... * 3303
White County—
W. C. McBride, Crawford 3, ne se ne 32-3s-14w 186 2928
S. C. Yingling, Bump 1, sw sw nw 33-3s-14w 125 2843
Buell-Herndon Drlg., Cox 2, w½ nw ne se 5-4s-14w 37 2855
Superior, Fitton 27, e½ se sw se 21-4s-14w 150 2862
Ford et al "C" 15, sw sw sw 27-4s-14w 160 2835
Ford 23, n½ n½ se sw 28-4s-14w 95 2730
Fitton "A" 24, nw se se 28-4s-14w 118 2860
Given et al 13, s½ ne nw sw 34-4s-14w 200 2841
Tide Water, Bacon 2, nw sw ne 5-5s-14w 101 2887
Sinclair-Wyoming & Ohio, Rudolph 15, ne se sw 12-6s-9e 5 2277
Cherry-Kidd & Lambert, Karch 4, sw sw se 13-6s-10e ..... * 2867
McIlvain & McIlvain, Poole et al 1, se sw ne 13-6s-10e 64 2018
J. P. Babcock, Sessions et al, nw se sw 24-6s-10e ..... * 2253
Sinclair, McGill 1, se se se 10-7s-8e 70 2953
Cities Service, Mount 2, se se ne 11-7s-8e 123 2180
Kingwood-Sinclair, Martin 1, nw ne nw 13-7s-8e 14 2995
Phillips, Ledbetter 1, nw nw ne 14-7s-8e 14 2995
OLD WELL DEEPENED
Jefferson County—
Gulf, Eubanks 2, nw se sw 35-2s-1e (otd 1958) 540 1963

Indiana

Daviess County—
R. D. Brown, Inc., Chapman 2, c nw sw 15-2n-6w ..... * 977
John Adcock, Norris 1, w½ sw sw nw 9-2n-5w ..... * 650
Gibson County—
R. N. Sylvestre, Potts 1, c w½ sw sw 24-1n-10w 170 1704
Hall Edwards, Rec., Maier 49, ne sw nw 12-3s-14w ..... * 2885
Marshall County—
W. A. Anderson et al, Erb 1, se se se 5-29n-4w ..... ¶328 644
Posey County—
Hollandsworth et al, Egli 1, se ne sw 19-6s-12w ..... * 2367
Randolph County—
Brown et al, Reichart 1, nw nw se 25-7s-15w ..... * 2125
Spencer County—
R. E. Cope, Parsley 2, nw nw se ne 31-7s-6w 4 924
Vanderburgh County—
Banderburgh Oil, Hornby "B" 11, sw ne se 32-5s-10w ..... * 980
Vigo County—
Siosi Co., Riggs Hrs. 27, sw nw sw 32-10n-10w 100 2194
Wayne County—
Unionport O&G, Clark 2, nw sw sw 9-17n-13e ..... ¶259 1068
OLD WELL DEEPENED
Daviess County—
Hart Bros. Oil, Hart 3, sw nw sw 5-2n-5w (otd 455) ..... * 611

Kansas

Barton County—
Solar Oil, Schartz 3, sw ne ne 18-16s-11w 514 3321
Fred Steckel et al, Frederick 1, c w½ sw ne 16-16s-11w ..... * 3380
Sinclair-Prairie, Wilborn 1, sw sw ne 27-16s-13w ..... * 3428
H. Bennett et al, Steckel 5, c n ½ s ½ sw 1-20s-11w 3000 3278
Butler County—
Cities Service, Wilson 202, nw se sw ne 8-25s-5e 25 1993
Wilson 203, ne nw se 8-25s-5e .. 30 2021
Stokes 94, se sw ne 33-25s-5e 39 1985
Stokes 95, ne c sw ne 33-25s-5e .. 300 1987
Wallace 19, ne sw nw 11-28s-4e .. 15 2087
Sinclair-Prairie, Adams 120, c s ½ s½ se 31-25s-5e 35 2542
Linn 61, se nw sw nw 5-26s-5e .. 35 2439
Adair-Morton, Thomas "A" 3, nw sw se 10-28s-7e 374 2794
Cowley County—
A. Brewer, Miller 3, sw nw sw 16-32s-5e (pb 3094) 833 3100
Sinclair-Prairie, Gibson 2, se ne nw 29-34s-3e 364 3400
Ellis County—
Cities Service, Slimmer 1, c w ½ sw nw 19-11s-16w 3000 3402
Sinclair-Prairie, Slimmer 2, se nw sw 19-11s-16w 78 3397
Dickey, Stein 7, c e ½ se se 7-11s-17w 3000 3370
Shell, Deane 3, 23 ft. e of ne nw ne 14-11s-18w 3000 3280
Lynn 2, apx. sw ne se 14-11s-18w (pb 3424) 509 3428
Ellsworth County—
Skelly, W. T. Smith 2, c s ½ sw nw 32-17s-10w 691 3262
Branine et al, Stumps 3, c e½ ne sw 33-17s-10w 392 3259
Stumps 4, c e ½ se sw 33-17s-10w * 3305
Greenwood County—
W. A. Kent, Bays 1, c e½ e½ nw 29-23s-13e (pb 1681) 5 1685
G. A. Fuller et al, Baker 1, c e½ ne sw 17-26s-13e ..... * 1537
Jefferson County—
Anderson et al, Means 1, c se nw 29-9s-20e ..... ¶18.6 1454
E. V. Jackson, Shoemaker 1, nw ne se sw 30-9s-20e..... ¶1.070 1438
A. & B. Pipe Line, Bankers Life 1, nw ne sw 4-10s-20e ..... * 1670
Longwell et al, Bower 1, c nw ne 5-10s-20e ..... ¶15.1 1495
Mossbacker, Van Druff 1, c n½ ne nw 8-10s-20e ..... ¶13.2 1578
Kingman County—
Skelly, Katcliff 7, c n½ nw 30-27s-10w ..... ¶19.282 4212
Leavenworth County—
Max Cohen, Dacker 1, nw sw nw 12-8s-20e ..... * 1926
Marion County—
Ring-Mac, Henke 1, c w½ sw sw 34-17s-4e ..... * 2470
Pawnee County—
Amerada, Bowyer 3, c s½ ne sw 12-20s-16w 1246 3814
Phillips County—
Cities Service, Pinkerton 2, sw sw ne 31-5s-20w 974 3628
Ray "B" 3, sw sw nw 32-5s-20w 1649 3626
Pratt County—
Skelly, Henderson 1, ne ne sw 2-26s-14w ..... * 4515
Reno County—
Republic Nat., Snowberger 2, 35 ft. e of sw sw ne 21-23s-10w 3000 3785
Republic, Snowberger 3, ne nw ne 21-23s-10w 600 3783
Simpson Oil, Snowberger 3, ne se ne 21-23s-10w 1320 3807
Landon, Union Central 5, c n½ sw nw 7-24s-10w 2240 3747
Rice County—
Lauck & Moncrief, Grizzel 1, c s½ se sw 7-19s-9w (pb 3054) ..... * 3299
Murphey 1, c n½ se nw 22-19s-9w (pb 3140) 432 3223
Skelly, Graham 6, c n½ ne se 16-20s-10w 2371 3138
Stormfeldt & Hyde, Graham 3, c n½ sw se 16-20s-10w 103 3211
Vickers, Rose "B" 2, c e½ ne se 19-20s-10w 3000 3296
Rooks County—
Cities Service, Buell 3, c e½ se sw 19-9s-16w 160 3270
Russell County—
Stanolind, Ben Rein 9, csl sw ne nw 25-14s-14w 374 3245
Cities Service, Streaker "B" 4, c s½ s½ ne 36-14s-14w 408 2938
A. H. Witt, Waudby 1, c s½ nw nw 26-14s-15w 125 3183
Central Pet., Hilgenberg "B" 1, c s½ se ne 18-15s-12w ..... * 3324
Leader Oil, Hinderliter 7, csl se ne nw 33-15s-13w 1258 3349
Eldorado Ref., DeWald 1, ne ne nw 1-15s-15w 206 3045
Continental, Meharg 12, se se ne 17-15s-13w (pb 3243) 214 3334
Stafford County—
Gulf, Figger 1, c e½ ne ne se 9-24s-11w (pb 3853) 107 3883
Stanolind, Richardson 11, c w½ nw nw 10-24s-11w 2747 3785
OLD WELLS DEEPENED
Barton County—
Jonas & Springer, Rick 2, se sw sw 1-19s-11w (otd 3425) ..... 4200 ....
Russell County—
Skelly, Opdycke 5, se se sw 29-14s-13w (otd 2914) 85 2984
Central Pet., Boxberger "A" 1, nw nw nw 36-15s-15w (otd 3191) ... 75 3253
Stafford County—
Stanolind, Fuller 3, ne se sw 11-24s-11w (otd 3771) 1558 3816

Kentucky

Daviess County—
Cumberland Pet., Ivy 14, 2-N-31..Input 630
Hancock County—
Henry Scholl, Parrott 1, 17-P-33.. 15 509
Henderson County—
W. E. Hupp, King-Pruitt 6, 23-P-26 33 1583

North Louisiana

Bossier Parish (Bellevue)—
Premier Inv. Co., Vance 4, 16-19n-11w ..... * 396
Caddo Parish (Pine Island)—
Texas Co., Herold 12, 14-21n-15w 86 1561
Franklin Parish (Wildcat)—
H. L. Hunt, Chicago Mill 6, 21-12n-9e ..... * 4485
Grant Parish (Urania-Georgetown)—
D. E. Grandstaff, Morrison 4, 10-9n-1e 15 1535
Grant Parish (Wildcat)—
H. L. Hunt, Goodpine F-7, 24-8n-1w * 4795
LaSalle Parish (Nebo)—
H. L. Hunt, Goodpine F-6, 16-7n-3e 183 4276
Placid Oil Co., Gray 1, 38-7n-3e.. 162 4070
Union Parish (Monroe)—
Insterstate Nat. Gas Co., Fee 111, 12-20n-3e ..... ¶2 2147
Noe & Woods, Parks 1, 30-20n-4e ¶10 2156

South Louisiana

Cameron Parish (Pecan Lake)—
Superior, Miami Corp. 2-B 16 11426
Iberville Parish (Bayou Blue)—
Superior, Schwing 15..... 124 6006
Iberville Parish (St. Gabriel)—
Shell, Gueymard 5 ..... 233 7782
Titanic, Natalbany 1-B 193 7814
Jefferson Parish (LaFitte)—
Texas Co., Madison Realty 10-A.. 269 8215
LaFourche Parish (Lake Long)—
Fohs, State-Lake Long 15 ..... 712 10179
St. Landry Parish (Port Barre)—
Grubb & Hawkins, Cormier 1..... * 6022
Pan American, Garland 11..... 150 6049
St. Martin Parish (Anse la Butte)—
Stanolind, Bergeron Unit 1..... 105 4960
St. Martin Parish (West Lake Verrette)—
Shell, Norman Breaux Lbr. 4-A.. 17 3385
St. Mary Parish (Bayou Sale)—
Humble, McAnnelly 1..... 843 10207
Terrebonne Parish (Pointe au Fer)—
Barnsdall, Nelson Development 3 ¶ 10205
Terrebonne Parish (Lapyrouse)—
Gulf, Picou 1..... ¶ 12149
Vermilion Parish (Erath)—
Texas Co., Belair 1 ..... 101 11626

Michigan

Clare County—
E. V. Hilliard, Felthouse 1, c s½ ne ne 3-20n-3w ..... * 3500
Taggart Bros., Chapin 34, c nw 19-20n-6w ..... ¶½ 1425
Lenawee County—
O. H. Powell, Iott 1, sw se ne 1-6s-5e ..... * 2304
Ralph LaBlanc, Fick 1, c s½ sw se 26-6s-5e ..... * 3150
Livingstone County—
Fisher-McCall, Weimeister 1, c s½ 10-2n-5e ..... * 1210
Mason County—
Gordon Oil Co., Cartier 1, se se se 30-20n-15w ..... * 3214
Midland County—
Atha Supply Co., Stapelton 7, c nw ne 13-14n-2w 10 3558
Missaukee County—
Turner Pet. Corp.'s Blue 1, c n½ nw nw 33-22n-6w ..... * 3990
Monroe County—
M. R. McPherson, Sphr 1, nw nw nw 20-6s-6e ..... * 2172

[*Continued on next page*]

United States Well Completions—*Continued*

MICHIGAN—Continued

Company, Well and Location	Init. Prod. Bbls.	Depth
F. M. Douglass, Duval 2, se nw nw 31-6s-6e	*	2174
Duval 3, ne nw nw 31-6s-6e	*	2230
Regis Cook, Plotner 1, nw ne ne 31-6s-6e	*	2190
Osceola County—		
Turner Pet. Corp., Gas Unit 3, nw sw nw 25-19n-8w	*	1500
Taggart Bros., Eichenberg 25, c sw 17-18n-10w	¶2	1205
Gulf, Linder 2, c n½ se se 19-18n-10w	2100	3605
Truax 1, c s½ ne ne 19-18n-10w	1800	3605
Gordon & Bolgers, Meida 1, c s½ se se 20-18n-10w	3900	3550
Ohio, State 2, c n½ nw nw 28-18n-10w	*	3595
Auten 2, c s½ ne nw 29-18n-10w	4000	3557
Sitts 1, c n½ nw sw 29-18n-10w	350	3605
Steadman 2, c n½ nw nw 29-18n-10w	1800	3609
Baderschneider 2, c s½ nw sw 30-18n-10w	4200	3633
R. Gingrich 2, c s½ nw sw 30-18n-10w	1900	3636
Gingrich 3, c n½ nw nw 31-18n-10w	100	3634
Johnston 1, c s½ nw ne 30-18n-10w	300	3641
Tuscola County—		
Brehm & Carr, Polmanteer 1, ne se sw 24-14n-7e	*	3468
Van Buren County—		
Bridger Basin Oil Corp., Stadler 1, se sw sw 1-1s-14w	80	1276
R. D. Malcolm, Truax 1, se sw se 2-1s-14w	70	1296
E. W. Leeder, Ampey 1, se ne nw 11-1s-14w	10	1287

Mississippi

Company, Well and Location	Init. Prod. Bbls.	Depth
Stone County (Wildcat)—		
H. I. Morgan, U. of Mississippi 1, 35-3s-10w	*	8505
Yazoo County (Tinsley Dome)—		
Hassie Hunt, Martin 1, 35-10n-3w	885	4863

Nebraska

Company, Well and Location	Init. Prod. Bbls.	Depth
Richardson County—		
Skelly, Davisson 5, sw nw ne 20-1n-16e	286	2320
R. L. Campbell et al, Schock "B" 5, c n½ ne nw 29-1n-16e	125	2425

Missouri

Company, Well and Location	Init. Prod. Bbls.	Depth
Knox County—		
Harris et al, New Kirk 1, ne ne ne 11-61n-11w	*	853
Johnson Oil, Early 1, nw nw se 1-61n-12w	*	804

New Mexico

Company, Well and Location	Init. Prod. Bbls.	Depth
Eddy County—		
Bassett-Birney et al, Roberts 1, se ne nw 35-18s-26e	58	1152
Franklin Pet. Co., Canfield 2-A, nw sw nw 7-18s-30e	1020	2804
A. H. Hover et al, State-Potoroff 1, swc 19-17s-28e	130	483
McGonagall et al, State-Carper 1, nec 4-18s-28e	150	2247
Murchison & E. W. Closuit, Foster 2, c ne sw 17-17s-31e	60	3492
Lea County (Maljamar)—		
Brock Drl. Co., Walker 1-A, c ne ne 5-18s-32e	480	3743
Lea County (Monument)—		
B. H. Nolen et al, Cooper 2, nwc 3-20s-37e	165	3808
Lea County (West Eunice)—		
Wilson Oil Co., State-Amerada 1, se nw ne 13-21s-34e	175	3790

Ohio

Company, Well and Location	Init. Prod. Bbls.	Depth
Ashland County—		
Hoag et al, Ely 1	25	2976
Glen Harmon, Hall 2	¶0.14	685
Athens County—		
H. B. Walker & Co., Castle 1	*	1185
Bern Oil & Gas Co., Harris 1	¶0.21	1109
W. L. Cromwell, Jeffers 1	¶0.2	1086
Cooper et al, Chapman 1	*	1000
Coshocton County—		
Ohio Fuel, Hays 1	¶0.5	3370
Pure Oil, Ashcraft 4	107	3306
Fairfield County—		
City Natural, Wilson 1	¶0.09	2373
Guernsey County—		
Harral & Keith, Kennedy 1	*	1272
Hocking County—		
Ohio Fuel, Sunday Creek Coal Co., 7006	¶0.86	1136
Sunday Creek Coal Co., 201	*	3564
Holmes County—		
Ohio Fuel, Martin 1	¶2.25	3221
Jefferson County—		
John M. Elliott Co., Lee 2	½	1445
C. S. Kelly et al, Slatsman 1	15	990
Knox County—		
Ohio Fuel, Wilson 1	*	3020
Brooks Johnson, Bricker 5	¶0.21	766
Lawrence County—		
Portage Producers, Cambridge Clay Prod. Co. 18	¶0.3	481
Licking County—		
Ohio Fuel, Oatman 2	*	2640
Miles 1	¶0.08	2668
Maharg 2	¶1.15	2734
Allen Willey, Wince 1	¶0.22	2610
Loraine County—		
Ohio Fuel, Hawke 1	¶0.60	2716
Medina County—		
Conkling & Holmes, Hostettler O-14	10	491
Hostettler O-15	10	490
Ohio Fuel, Case 1	¶0.06	3309
Wm. Dempsey, Hutchinson 2	¶0.32	2198
Thornton Prod. Co., Ross F1	5	475
Ross F8	5	432
Meigs County—		
Downie et al, Gardner 1	¶0.3	677
Fleming et al, Heath 3	*	604
Guy Swadley et al, Fee 3	¶0.06	750
Monroe County—		
Wools Rocks Oil Co., McBride 2	¶0.06	700
Huntsman & Peters, Rohrer 2	¶0.04	2009
Morgan County—		
Williams Bros., Geddes 2	*	370
J. F. Graham et al, Griffin 1	½	834
Williams Bros., Geddes 5	*	1000
Muskingum County—		
Mehowa O&G Co., Floyd 2	¶0.5	4181
Noble County—		
Hays Bros., Mallett heirs 1	*	1075
Hutchinson Bros., Hutchinson 1	*	889
H. G. Clymer, Floyd 1	¶0.11	1798
Perry County—		
B. Davis et al, Starkey 1	25	2709
Ohio Fuel, Love 1	*	2747
Summit County—		
East Ohio, Graybill 1	¶0.07	4434
Tuscarawas County—		
Status Dev. Co., Farber 1	¶0.28	4932
Washington County—		
John Herlan, Matheny 1	¶ & 5	1269
Knob Oil Co., Pryor 10	4	1530
Wayne County—		
Ohio Fuel, Shaffer 2	¶1.26	3047
INPUT WELLS		
Medina County—		
Preston Oil Co., Clapp G03	..	503
Clapp G04	..	519
Monroe County—		
H. B. Walker & Co., English 14	..	1564
OLD WELL DRILLED DEEPER		
Burkhart et al, Hall 5	¶0.02	1825

Oklahoma

Company, Well and Location	Init. Prod. Bbls.	Depth
Caddo County—		
Ohio Oil, Pau-Kune 18, se ne se sw 3-5n-9w	894	3445
Rocket Drlg. Co., Walden 3, se ne se ne 1-5n-10w	106	3484
Phillips Pet., Farwell 4, ne ne nw 35-6n-10w	¶25	6135
Carter County—		
L. Sanders, Harmon 1-A, ne se sw 21-1s-2w	¶3	315
Phillips Pet., Robbie Lee 3, ne sw se 5-1s-3w	*	3177
W. T. Hale, Est., Voorhees 11, 220 ft n of c n l sw nw	60	2405
Comanche County—		
G. Truitt, Fee 20, ne c sw se 26-2n-11w	*	241
Creek County—		
Tilley Drlg., Williams 1, ne nw ne 20-17n-8e (pb 2370)	35	2377
Grady County—		
J. S. Graham, Cochran 2, nw sw sw se 27-3n-5w	30	1677
Jackson County—		
Vaughn, Stokes 10, ne sw sw 11-1n-20w	*	1607
Jefferson County—		
R. M. Johnson, Hefner 1, 20 ft n of se sw ne 30-3s-4w	*	200
Seitz-Comegys-Seitz, Bounds 1, se se nw 11-6s-6w	*	2000
Kiowa County—		
Amerada Pet., Boomer 2, nw sw ne 1-6n-14w (pb 705)	*	746
Latimer County—		
LeFlore, Galagher RO-44-A, nw se se se 11-6n-21e	¶.17	476
Lincoln County—		
Leader Oil, Richie 1, ne ne ne 32-15n-5e	65	3547
Logan County—		
Sunray Oil et al, Donoghue 6, sw ne se 7-17n-1w	240	5437
Deep Rock, Murphy 1, nw nw se 11-17n-2w	*	5687
Marshall County—		
Pure Oil, Little (210) 1, ne se nw 34-5s-7e	1560	5071
Okfuskee County—		
Summit Drlg., Steil 9, se nw ne sw 18-10n-11e (pb 1510)	¶15	1860
Replogle et al, Jefferson 2, sw nw ne 7-11n-8e	*	3761
Shell Oil, Lehmer "A" 1, sw se ne sw 26-11n-8e	*	2898
Smith 4, ne se sw 26-1n-8e	312	3470
Smith 5, ne sw se sw 26-11n-8e	460	3493
Palmer 1, 95 ft w of se se nw 35-11n-8e	207	3440
Deep Rock et al, Clovers "A" 1, se sw ne 20-11n-9e	¶14.4	3921
Owen 1, ne nw se 20-11n-9e	10	3937
Henneha 1, nw nw sw 21-11n-9e (pb 3816)	*	4023
Johnson & Martin, Lehmer 2, nw ne nw 35-12n-8e (pb 3647)	*	3677
Okmulgee County—		
Wallace, Colbert 23, ne se sw ne 14-14n-14e	¶0.2	589
Neumeyer, Flint 2A, ne c se nw 24-14n-14e	*	1014
Osage County—		
Moore & Skelly, 7, 180 ft s of c n½ nw sw 35-22n-8e	75	2512
Blackjack Oil Co., Means 1, ne ne sw 29-25n-7e	*	2756
Magnolia et al, 5, sw se sw 11-26n-6e	100	2889
L. B. Kahler et al, 14, sw nw se ne 25-27n-11e	8	993
Pittsburgh County—		
Choctaw, Harmon et al 2, nw c se nw 24-7n-17e (pb 2328)	¶6.8	2378
Pontotoc County—		
Blackwell O&G, Riddle 1, nw nw ne 9-3n-5e	¶1.1	1540
Huddleston, Patterson 1A, ne c nw 29-5n-8e	15	968
Pottawatomie County—		
Arab, Trousdale 1, ne ne nw 31-7n-3e	*	5249
Magnolia, Ellis-Jones 1, se se sw 8-7n-4e	189	4099
Atlantic, Burk 5, nw sw ne 16-7n-4e	110	3549
Eagle, Weatherford 1, se se sw 9-7n-5e	305	4112
Kerlyn et al, Bowlby 1, se se se 9-7n-5e (pb 4132)	315	4145
Amerada, Bodkins 2, sw sw se 27-8n-4e	215	3860
Ohio, Bearse "A" 1, se sw se 21-9n-4e	388	4783
Seminole County—		
Malernee, Hammrick 4, sw nw nw 34-7n-6e	96	2787
Keener, Homestake 1, sw sw nw 28-7n-7e (pb 2138)	25	2164
Stephens County—		
Magnolia Pet., Dillard 29, nw ne sw ne 2-2s-5w	12	696
Geo. Pace, Allen 30, ne ne sw ne 3-2s-8w	*	2222
Razin Bros., Laurey 1, se ne sw 6-3s-5w	*	1400
OLD WELLS DEEPENED		
Caddo County—		
Geo. Pace, Davis 5, nw sw nw 6-5n-9w (otd 3405)	408	3407
Carter County—		
W. H. Smith, Ward 14, se c ne ne 19-4s-2w (otd 2119)	470	2269
Hughes County—		
Mid-Continent, Tiger 1, se sw ne 9-7n-8e (otd 2977, pb 3229)	*	4377
Jackson County—		
Pioneer Oil, Hardcastle 3, 40 ft w of c se sw 15-1n-20w (otd 1413)	6	1465
W. Lunderson, Rawls 1, se nw se 22-1n-20w (otd 1615)	*	1765
Pontotoc County—		
Magnolia, Simpson 9, nw ne ne 29-2n-7e (otd 4335)	23	4356
Pottawatomie County—		
Newoka Oil, Jordan 1A, sw se se 10-7n-4e (otd 3853)	*	4318
Seminole County—		
McQueen, McCan 2, se se ne 33-7n-6e (otd 2865)	20	2906

Pennsylvania

BRADFORD DISTRICT

Company, Well and Location	Init. Prod. Bbls.	Depth
Ernest Meridan et al, Cleveland	1	....
McCaffery, Krampf & Clark, fee	1	....
Roggebaum Bros., McCaffery	½	....
Miller Bros., fee	6	....
J. A. Bucher et al, Kinley Oil Co.	6	....
G. W. Smith Estate, fee	1	....
Messer Oil Corp., Redfield	2	....
Esther Oil Co., Inc., Lamton	1	....
A. Stover, fee	1	....
H. E. Canis Estate, No. 2 Lamb	2	....
Bradford Transit Co., 22 wells	22	....
Forest Oil Corp.	1	....
Forest Pet. Corp.	1	....
Niagara Oil Corp., 3 wells	3	....
Water Intake—		
Nix Creek Oil Co., fee	..	....
D. Y. M. Corp., Bing 466	..	....
Melvin Towne Oil Co., fee	..	....

[*Continued on next page*]

United States Well Completions—*Continued*

Company, Well and Location	Init. Prod. Bbls.	Depth
PENNSYLVANIA—Continued		
Pine Run Oil Co., Bing 130-1-2-3-4-6	..	....
Forest Oil Corp.	..	....
Forest Pet. Corp.	..	....
Niagara Oil Corp., 2 wells	..	....
New York-Penn. Gas Field—		
Empire Gas & Fuel Corp., Burt Dunshie	¶	....
MIDDLE DISTRICT		
Morris Goldstein, fee	1½	....
United Natural Gas Co., A. L. Byers	¶	....
First Nat'l Bank of Oil City, Frank Messina	1	....
Shoup & Vensel, fee	2	....
Edna Alberta Burns, T. J. McElree	1	....
BUTLER-ARMSTRONG DISTRICT		
United Natural Gas Co., Steiner	¶	....
Price Bros., North Butler church property	•	....
W. L. & F. E. Kelly, W. E. & J. B. Shimmel	•	....

Texas Panhandle

Carson County—		
The Texas Co., Schafer 4	113	3170
Gray County—		
Sinclair Prairie, Pope 7	101	3335
Skelly, Schafer 135	359	3272
W. H. Taylor et al, Fee 5	120	2858
Texas Co., Saunders 35	155	2817
D. R. Tripplehorn et al, Webb 8	64	2755
Hutchinson County—		
Phillips, Cockrell 81	226	3047
Cockrell 83	302	3062
Lizzie 6	216	3275
Shell, Harvey Sisters 30-B	142	3102
Harvey Sisters 33-B	137	3080
Harry Stekoll et al, Whittenburg 11-A-L	56	2928
Texas Co., Garner 17-A	399	3100
Pond 38	213	3085
Quinn 19	113	3090
Wheeler County—		
Charlette Oil Co., Mitchell 1	20	2133

North Texas

Archer County (Griffin-Kadane)—		
Jack E. Kadane, Tr, E. P. Griffin 2-C	1632	4398
Archer County (Scotland)—		
Shell, Coleman 4-A (new pay, pb 5560)	3792	5850
Baylor County (Seymour)—		
E. C. Lawson et al, Green 1	•	3220
Clay County (Antelope)—		
Shell, H. Henderson 17-C	6	6100
Clay County—		
Geo. Golden et al, 1st. Texas Stock Bank 8-C	70	1128
Gorman & Christie, Taylor 7	49	1135
Shell, Coburn 15	•	921
Staley Oil Co., Hamilton 3	75	1131
Stayton Oil Co., McGregor 21	30	1184
Sussex Oil Corp., Hamilton 10	55	1132
Cooke County—		
E. W. Mudge, Jr. et al, Fette 6	20	1099
Richards & Bohner, Fleitman 2	•	822
Jack County—		
Harper-Knappenberger et al, Loving 6	•	3324
Throckmorton County—		
Owenwood Pool No. 3, Housley 14	60	745
Housley 15	13	742
Throckmorton County (Wildcat)—		
Helmerich-Payne & Phillips, Batchler 1	•	5112
Wichita County—		
Akin-Dimock-Costley, Oats 1-AA	•	1316
Jas. L. Anderson et al, Jenne 1	•	1352
W. H. Hammon et al, Johnson 8	16	1314
Hammon-Hanlon & Buchanan, Fassett-Tuttle 49-A	67	622
Hanlon & Buchanan, Burnett 7-AA	9	727
D. A. Kahn et al, Roller 1	•	291
Richards & Kohlman, Foster-Allen 6 (pb 230)	2	631
W. E. Production Co., Murphy 2	•	1385
Wichita County (K-M-A)—		
Bishop Oil Co., Waggoner Bros.-Texaco 1-E	372	3896
Wichita County (K-M-A Ellenberger)—		
Blanco Oil Co.-Al Buchanan, Thom 9-E	1080	4388
Fain-McGaha Oil Corp., Griffin 9-B-E	2072	4276
Iowa Payne Oil Co., Thom 3-A-E	592	4390
Wilbarger County (Fargo)—		
Amerada, R. E. Harrell 1-A (pb 3924)	120	4365
Wilbarger County (Rock Crossing Ellenberger)—		
Phillips, Waggoner-Bates 10 (new pay)	849	3815
Wilbarger County—		
Paradise Oil Co., Waggoner Est. 6-A	10	1891
Waggoner Est. 7-A (pb 3016)	600	3818
Young County (Wildcat)—		
Kerlyn Oil Co. et al, Hazelton 1 (pb 3395)	15	4615
Young County—		
Leslie C. Lawler et al, Schlittler 3	2000	3770
Pemeta Oil Co., Robinson 6-B	8	674
Tolbert-Karrenbrock & Wells, McCluskey 1	•	4682

Southwest Texas

CORPUS CHRISTI DISTRICT

Brooks County (Kelsey)—		
Humble, McGill 78	500	4969
Fayette County (Wildcat)—		
M. M. Miller & Sons, Kerr 1	•	3323
Jackson County (Lolita)—		
Cox & Hamon, Scott 1-A	•	5975
Jackson County (West Ranch)—		
Magnolia, West 195-A	550	5745
West 204-A	500	5775
Jim Wells County (Ben Bolt)—		
H. H. Howell, Johnson 1	750	5297
Jim Wells County (E. Premont)—		
Transwestern Oil Co., Dunlap 6	450	6055
Jim Wells County (LaGloria)—		
Magnolia, Conkle 1, outpost	¶80	7500
Kleberg County (Stratton)—		
Humble, King Ranch-Paso Ancho 1	400	6620
Nueces County (Agua Dulce)—		
Hewitt & Dougherty, Cain 1	¶40 & 200	7105
Richardson Pet. Co., Knight & Jackson 1	700	7145
Texon Royalty Co., Austin 5	800	7036
Nueces County (Clara Driscoll)—		
E. A. Graham, Gandy 4-A	300	5897
Wellington Oil Co., Driscoll 16	¶30	3821
Nueces County (Minnie Bock)—		
E. A. Graham, Riedel 2	41	3817
Tom Graham, E. Connoly 2	•	3845
Refugio County (Tomoconnor)—		
Quintana, Heard 29	1500	5925
San Patricio County (Midway)—		
British American, Coggin 2	•	6506
San Patricio County (Odem)—		
Wellington Oil Co., Lane 1	425	5445
San Patricio County (Wildcat)—		
Henshaw Bros., John Hancock 1	•	7215
Victoria County (Cologne)—		
Houston Oil Co., Balli 1	•	5050

SAN ANTONIO DISTRICT

Bexar County (Gas Ridge)—		
Gas Ridge, Inc., Hamilton & Swain 42	1½	480
Maverick County (Wildcat)—		
Continental, Baker 1	•	2400
Milam County (Minerva-Rockdale)—		
T. Y. McCormick, McGuire 3	5	700

LAREDO DISTRICT

Duval County (Casa Blanca)—		
Adelon Oil Co., Martin 2-D	•	1225
Duval County (Charamousca)—		
N. V. Duncan, Worden & Drought 4-A	•	1610
Duval County (Lundell)—		
Government Wells Oil Co., Lundell 51	122	1554
Lundell 57	38	1550
Lundell 58	44	1574
Duval County (Wildcat)—		
Graham Bros., H. Yaeger 1	•	1080
Jim Hogg County (Colorado)—		
C. Andrade, III, F. G. Trevino 3-I	225	2836
Starr County (Boyle)—		
Fair & Borsodi, Waite 1	•	4520
Starr County (Rincon)—		
Continental, Slick 113-B	500	4182
Starr County (Sun)—		
Sun, Perez 1	250	4749
Webb County (Killam)—		
Mims & Abel, Laurel 11	66	2080
Webb County (Wildcat)—		
H. E. Murray, Adami 2	•	1065

East Texas

Kilgore Area—		
Bowles Oil Co., Wells 21	1200	3681
Sam Gross & Schulman, Walker-Sun 4	6	3817
Wright & Smith, Harris 3	900	3567
Harris 4	900	3568
Longview Area—		
Kewanee Oil Co., Adams 8	4000	3580
Sells Pet., Inc., Fisher 11	1500	3602
Shell, Richey 42	3000	3664
Stanolind, Custers 14	2500	3582
Tide Water Associated, Lake Devernia 48	4000	3514
Fannin County (Wildcat)—		
H. W. English et al, Parkhurst 1	•	1100
Freestone County (Cayuga)—		
Stanolind, Moody 4	105	4042
Limestone County (Wildcat)—		
Farrell Drl. Co.-Frank Bryan, Gilliam 1	•	4867
Navarro County (Richland)—		
Temple Hargrove et al, West 2	47	3030
Panola County (Carthage)—		
Turner & Smith, Dunaway 1, Cotton Sur	¶25	4959
Red River County (Wildcat)—		
Magnolia, Henry 1	•	4789
Shelby County (Wildcat)—		
Ce-Beth Oil Co., Pickering 1, Patterson sur	50	3343
Titus County (Talco)—		
Humble, Temple 6	438	4341
Wood County (Hawkins)—		
General American, Smith 1, blk 23	478	4798
Humble, B. F. Allen 1-B (40-ac)	133	4915
W. L. Allen 1 (41/100-ac)	422	4829
M. A. Kay 2 (61.15-ac)	310	4874
T. P. Ry. 22 (7.82-ac)	63	4845
Roger Lacy et al, Pouncey 2 (101.48-ac)	353	4809
Pouncey 3 (101.48-ac)	347	4805

West Texas

Cochran County (Slaughter)—		
Anderson-Prichard, Woodley 8	1075	5050
Atlantic, Boyd-Humble 24	1155	5050
Devonian Oil Co., Woodley 3	560	4971
Magnolia, Mallet 4-A	1415	4990
Woodley 13	745	4980
Crane County (Sand Hills)—		
Magnolia, Lea 4	207	4691
Crane County (Sand Hills Ellenberger)—		
Gulf, Waddell et al 29	9770	5647
Crockett County (World-Powell)—		
G. M. Smith et al, Powell-Gulf 2-A	192	2662
Ector County (Foster)—		
Forest Dev. Corp., Moss 14-H	941	4267
Ector County (North Cowden)—		
Sinclair Prairie, Johnson 19-D	1997	4175
Gaines County (Seminole)—		
Amerada, Matthews 8-A	802	5370
Turlin 12	863	5315
Hockley County (Slaughter)—		
Delta Drl. Co., Veal-Slaughter 3	1383	4985
Devonian Oil Co., Mallet 3	1667	5037
Honolulu Oil Corp., Mallet 13-B	1583	5030
Slaughter 7-A	1104	4962
Magnolia, Mallet 7-E	1156	5015
Stanolind, Slaughter 36-B	1639	5025
Texas Co., Slaughter 34	1192	5005
Slaughter 40	1562	5003
Slaughter 41	2277	5005
Slaughter 42	1027	5005
Western States Gaso. Corp., Mallet 11-B	1374	5040
Howard County—		
Standard of Texas, Dodge 13	127	2875
Mitchell County (Northwest)—		
F. W. Merrick, Inc., E. T. Strain 1-A	219	1673
Pecos County (Abell)—		
Magnolia, Francisco 1	1783	5096
Pecos County (Lehn)—		
Samwan Oil Co., Boren-Humble 4	47	1724
Pecos County (Taylor-Link)—		
Allan Hargrave et al, University-Conoco 1 (pb 1595)	4	1746
Reeves County (Wildcat)—		
C. A. Kitsos et al, Burchard 1	•	1000
Runnels County—		
Art Tucker et al, Wylie 1	•	2354
Terry County (Slaughter)—		
Gulf, Mallett 10	1595	5040
Tom Green County (Funk)—		
Provine & M. D. O'Quinn, Funk 2	•	1110
Upton County (McCamey)—		
T. P. Coal & Oil Co., J. F. Lane 46-A	197	2133
Ward County—		
Gulf, Estes 151	397	2635
Winkler County (Emperor)—		
Phillips Pet. Co., McCabe 8	226	2824
Winkler County (Keystone)—		
J. R. Sharp et al, Jenkins-Gulf 7	256	3441
Yoakum County (Wasson)—		
Aloco Oil Co., Carpenter-Texaco 1	164	5198
Dan Danvers et al, Willard 6-B	768	5288
Gulf, Elliott 7	723	5200
Humble, Randall 11	336	5098
Magnolia, Bennett 10	76	5262
OLD WELL DEEPENED		
Pecos County (Abell)—		
Magnolia, Baldwin-State 1 (otd 5225)	¶8.1	5696

Texas Gulf Coast

Brazoria County (Wildcat)—		
Pure, T. L. Smith 1	•	8626
Chambers County (Barbers Hill)—		
Stanolind, Chambers Co. Ag. Co. 32	271	5544
Chambers County (Fig Ridge)—		
Sun, Kaufman Pool 1-C	•	9021
Harris County (Wildcat)—		
Grubb & Hawkins (J. M. Campbell), Buxbaum 1	•	6517
Harris County (Dyersdale)—		
H. C. Cockburn, Burkitt 14	203	4077
Harris County (Goose Creek)—		
Grace Oil Co., Mrs. A. Wright D-2	15	2560
Harris County (Humble)—		
Sun, Bender 16	17	3924
Jefferson County (Lovell Lake)—		
Humble, Broussard 29	81	7723

WILDCAT REPORT
New Starts and Completions

ARKANSAS
COMPLETIONS
Lee County—Stanley A. Thompson, Comer 1, 330 ft s & w nec 17-3n-2e, abnd 3807 ft.

CALIFORNIA
FIRST REPORTS
Kern County—E. A. Parkford's No. 1, 12-29-21, rig.
Los Angeles County—Rankin & Norell's Ferguson 1, 31-4-16, rig.
COMPLETIONS
Kern County—Hancock Oil Co.'s Roberts 2, 6-30-28, bottomed 5203 ft, redrilled to 4292 ft, producing from 55 ft formation from 4237 to bottom. Initial production 140 b/d 26-gr oil cutting 8% through 18/64 bean, together with 700,000 ft gas with 400 pounds tubing pressure, 560 pounds casing pressure. Represents extension completion in area in which previous wells non-commercial; Union Avenue area.

ILLINOIS
FIRST REPORTS
Bond County—Fox & Conray's Elain 1, sw nw ne 11-4n-2w, dr.
Clay County—Sanders et al's Hager 1, se sw se 27-4n-7e, dr.
Effingham County—Williams et al's Detters 1, c e½ nw 3-8n-7e, lcn.
Franklin County—Oil Carriers, Inc.'s Franklin Coal Co. 1, 220 ft w of sw sw se 28-7s-1e, lcn. Bell & Zellar Coal Co.'s Zigler Coal & Coke Co.'s 1, 180 ft e of ne ne nw 19-6s-2e, Carter's Sherriff 1, sw se nw 28-5s-1e, lcn.
Gallatin County—N. V. Duncan et al's Blair 1, se se ne 20-8s-10e, lcn.
Hamilton County—J. Bedell et al's Hoyer 1, se nw sw 4-5s-6w, dr.
LaSalle County—O. L. Greer's Davis 1, sw sw sw 23-35n-2e, dr.
Richland County—Ohio's Lambert 1, ne se se nw 17-2n-14w, dr.
COMPLETIONS
Clinton County—Texas' Grey 1, s½ nw se 35-3n-2w, Devonian 2118-28 ft, td 2684 ft, 17,500,000 cubic ft gas. J. D. Finley et al's Bennett 1, ne se ne 36-3n-2w, abnd 1325 ft.
Edgar County—Vestern Leonard's Baker 1, w½ nw nw nw 19-15n-13w, abnd 960 ft.
Fayette County—Interstate Oil Cruising's Morgan 1, nw nw nw 36-9n-1w, abnd 2933 ft. Joe Longoria's Braasch 2, n½ ne ne sw 1-5n-2e, abnd 1810 ft.
Jackson County—Charles Mercer et al's Williams 1, ne ne ne 9-8s-1w, abnd 2330 ft.
Jasper County—Sinclair-Wyoming's Freeman 1, e½ nw sw 15-6n-9e, abnd 3131 ft. Pure Oil's Kessler "A" 1, c e½ ne sw 15-6n-10e, abnd 2833 ft.
Jefferson County—Eason Oil's Gilbert 1, nw nw se 16-3s-1e, abnd 2425 ft. Nash-Redwine et al's Blankenship 1, nw nw sw 6-3s-2e, abnd 1750 ft. Redwine-Blalock et al's Howe 1, nw sw nw 6-3s-2e, abnd 501 ft.
LaSalle County—A. Hanna's Sage 1, s½ se se 3-32n-2e, abnd 445 ft.
St. Clair County—Ed Gieck's Frees 1, n½ n½ ne ne 13-2s-8w, abnd 465 ft.
Wayne County—Jablonski et al's Tennery 1, c s½ se nw 21-1n-6e, abnd 3303 ft.

INDIANA
FIRST REPORTS
Gibson County—R. D. Brown, Inc.'s Graulich 1, sw ne se 36-1s-10w, lcn.
Martin County—Burton & Brewer's Burris 1, sw ne ne nw 16-2n-4w, lcn.
Posey County—Carter & Gulf's Maier C-76 1, c n½ ne sw 1-7s-14w, lcn.
Sullivan County—Sun Oil Co.'s Queen 1, w½ se nw 17-6n-9w, lcn.
Vigo County—Henderson's Ickes 1, se ne ne se 35-23n-15e, lcn.
COMPLETIONS
Marshall County—W. A. Anderson et al's Erb 1, se se se 5-29n-4w, Dolo. 608-15 ft, td 644½ ft, 130 lb rp, 328,000 cubic feet gas.
Randolph County—Brown, Nelson & Eslick's Reichart 1, nw nw se 25-7s-15w, abnd 2125 ft.

KANSAS
FIRST REPORTS
Elk County—George Henderson's Lewis 1, nw nw ne 36-28s-8e, rum.
Reno County—Simpson Oil's Paine 1, sw nw ne 5-24s-10w, woc.
Rice County—Champlin Refining's Radenberg 1, 7-18s-10w, c s½ sw ne surface hole.
Stafford County—W. O. Allen's Ebsten 1, ne nw nw 7-22s-14w, dr.
COMPLETIONS
Barton County—Gen. Explor. Co. et al's Hammeke 1-A "B," c e½ ne sw 12-18s-12w, anhydrite 699 ft, Topeka 2695 ft, Lansing 3104 ft, Base K. C. 3370 ft, Congl. 3400 ft, Arbuckle 3444-56 ft, abnd. Helmerich & Payne's Schmidt 1, c e½ se nw 22-20s 15w, Topeka 3040 ft, Lansing 3358 ft, Congl. 3645 ft, Simpson 3658 ft, Arbuckle 3668-71 ft, 1000 gals acid, 13 bbls oil 28-gr, 1,500,000 cubic ft gas. New area.
Pawnee County—Helmerich & Payne's Wilson 1, ne ne se 26-21s-14w, anhydrite 1073 ft, Ft. Riley 2170 ft, Lansing 3534 ft, Congl. 3922 ft, Arbuckle 3977 ft, abnd 4032 ft.
Sedgwick County — National Refining's Thompson 1, sw se nw 4-27s-2e, Mississippi 2955 ft, pay 2956-58 ft, 35 bbls oil & 110 bbls water, grav 41 plus. New area.
Stafford County—T. A. Dines et al's Blackburn 1, nw nw ne 18-24s-11w, anhydrite 595 ft, Kinderhook 3753 ft, Viola 3838 ft, 3913 ft, water in hole, Simpson 3955-58 ft, abnd.

NORTH LOUISIANA
FIRST REPORTS
Bossier Parish—W. G. Coates, Bellevue 1, 1650 ft n & w sec 27-20n-11w, spd.
Catahoula Parish—H. H. Schoeffield et al, Davis 1, c se se 1-4n-5e, rig.
Tensas Parish—Carter Oil Co., Rhodes 1, 1650 ft s & 350 ft w nec 29-9n-10e, rig.
Winn Parish—H. L. Hunt, Goodpine F-13, c nw nw 19-11n-4w, dr.
COMPLETIONS
Franklin Parish—H. L. Hunt, Chicago Mill 6, c sw nw 21-21n-9e, elev 62 ft, top Sparta 1536 ft, Wilcox 2797 ft, abnd 4485 ft (Wilcox).
Grant Parish—H. L. Hunt, Goodpine F-7, c ne nw 24-8n-1w, elev 122 ft, abnd 4795 ft.

LOUISIANA GULF COAST
FIRST REPORTS
Jefferson Davis Parish—Cities Service Oil Company's Lacassine Land Company 1, Thornwell area, 660 ft of nw cor of se ¼ of sec 36-11s-5w, near south line of Jefferson Davis-Cameron Parish, 4 mi n Lakeside fld. Well on 5000-ac blk assembled after extensive geophysical work.
COMPLETIONS
Terrebonne Parish—Barnsdall's Nelson Development Company 3, Pointe au Fer, sec 35-12s-11e, showed gas 6751-71 ft & 6890-6910 ft, dst 6721-61 ft showed little oil, dst 6760-76 ft showed water & gas, elec long run 10,205 ft td, perf 6700-21, flowed estimated 25,000,000 ft gas daily. Flowed 2,058,000 ft gas 19 bbls dist thru ¼-in chk, tp 2375.
Terrebonne Parish—Gulf's Picou 1, Lapyrouse area, sec 70-20s-17e, perf 10,942-46 flowed 237 bbls 41.6-gr oil but water increased, repref 10,945-50 ft flowing oil some water. Several other tests made, all unsuccessful, repref 10,883-894 ft and completed as gas well, tb 4000 pounds.

MISSISSIPPI
FIRST REPORT
Montgomery County—Henderson Oil Co., J. M. Dotson 1, 300 ft n & e swc se sw 12-19n-6e, rig.
COMPLETION
Stone County—Harry I. Morgan, University of Mississippi 1, c se 35-3s-10w, elev 181 ft, top chalk 5771 ft, abnd 8505 ft.

NEBRASKA
FIRST REPORT
Lincoln County—W. R. Miller's O'Connor Ranch 1, c nw 26-11n-34w, dr.

NEW MEXICO
FIRST REPORT
Eddy County — Stroup-Yates & Flynn's State-Hartz 1, c ne nw 16-21s-23e, machine.

OKLAHOMA
FIRST REPORTS
Carter County—McElreath & Suggett's Kern 1, c se nw se 20-3s-1w, plts.
Hughes County—Keener Oil & Gas Co.'s Norton 1-A, 6-9n-10e, lcn.
Okfuskee County—Cochran & Anderson's Parks 1, nw nw se 30-12n-8e, rur.
Oklahoma County — Harper & Turner's Yeager 1, sw se ne 32-14n-3w, dr.
Pontotoc County—W. A. Delaney's Norris 1, nw sw ne 3-3n-6e, lcn.
Pottawatomie County—Kerlyn's Kirk 1, nw

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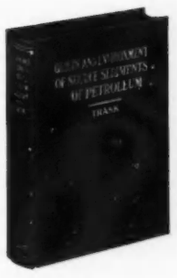

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ne sw 1-8n-4e, mit. Roodhouse et al's Blackburn 1, 3-10n-4e, dr.

Seminole County—Michaelson et al's Ashbreck 1, sw sw nw 34-10n-8e, dr.

COMPLETIONS

Kiowa County—Badger & Grove's Clark 1, sw sw ne 19-7n-16w, Congl. 800-24 ft, top Woodford 1100 ft, abnd 1554 ft.

Love County—J. S. Batson et al's Walden 1, c ne nw nw 34-6s-2e, soft Viola stain oil 2557-95 ft, test Viola 2475-2572 ft, td 2595 ft, 3000 gals acid, pump 20 bbls oil; new pool.

Osage County—Dev.'s Osage 1-A, sw sw ne 34-22n-7e, lime 602-10 ft, sdy lime 740-43 ft, shale & shells 743-55 ft, sd 760-72 ft, Layton 1645 ft, Cleveland 1918 ft, big lime 2170-2259 ft, Oswego 2270-2305 ft, Prue 2343-2425 ft, shot 2636-63 ft, swb 168/24 at 3065 ft in Hominy, 38° gravity, swab 150 bbls oil; new pool.

Pottawatomie County—Jenkins et al's Lightner 1, ne ne nw 4-5n-3e, abnd 2906 ft.

Seminole County—R. P. Tage's Fleets-Osborn 1-B, se sw ne 11-6n-7e, Calvin 1474 ft, td 1500 ft, pb 1488 ft, 30 bbls oil & 35 bbls water. Sasakawa area.

Stephens County—Carl Carter's Peek 1, sw sw nw se 1-3s-6w, gas sd 400-22 ft, 426-36 ft, gauged 9,680,000 cu ft gas, 100 lbs rock pressure.

MICHIGAN

FIRST REPORTS

Allegan County—Circle Drilling Co., Irwin 1, sw sw se 32-3n-16w, lcn.

Arenac County—Socony Vacuum, Palvelka 1, ne se se 9-15n-4e, rig.

Clinton County—J. B. Spitzley, Simon 1, nw ne se 21-7n-4w, lcn.

Tuscola County—Sun, Hinkley 1, c e½ se ne 16-13n-7e, rig.

COMPLETIONS

Livingstone County—Fisher-McCall, Weimeister 1, c s½ 10-2n-5e, abnd 1211 ft.

Mason County—Gordon Oil Co., Cartier 1, se se se 30-20n-15w, Monroe 2380 ft, abnd 3214 ft.

Missaukee County — Turner Petroleum Corp., Blue 1, c n½ nw sw 33-22n-6w, Dundee 3898 ft, so 3904 ft, abnd 3990 ft.

TEXAS GULF COAST

FIRST REPORTS

Fort Bend County—Jack Taylor, Tr., McFarland 1, on south flank Long Point dome, 8 mi e Needville, H.T.C. sur 102, lcn 2000-ft test.

COMPLETIONS

Brazoria County—Pure's T. L. Smith et al 1, Eagle Nest Lake area, 9 mi ne West Columbia, J. E. A. Phillips sur, 9400 ft w & little n Pure's Bessie Greenmeyer 1, dry hole, abnd 8625 ft.

Harris County—Grubb & Hawkins' (was J. M. Campbell) J. M. Buxbaum 1, 2 mi w Westfield, M. Tarin sur, abnd 6517 ft.

WEST CENTRAL TEXAS

FIRST REPORTS

Coleman County—States Oil Corp.'s T. J. Hudson 1, swc GH&H sec 74, blk 2, lcn.

Shackelford County—C. J. Kleiner et al's Dawson-Conway 1, se part Luke Bryan sur 24, sp.

Stephens County — Tom G. Shaw, tr's Whalen 1, nwc TE&L sec 1088, mim.

COMPLETIONS

Lampasas County—Robertson & McKissick's Smith 1, 1300 ft from n and 2950 ft from e lines D. W. Briggs sur 48, top Ellenberger 735 ft, abnd 826 ft.

Shackelford County—Carl C. Broyles et al's Simpson 1, ne sw B. A. L. sec 13, abnd 440 ft; Simpson 2150 ft w No. 1, abnd 432 ft.

SOUTHWEST TEXAS

FIRST REPORTS

Atascosa County—Jack Giblin's Richter 1, E. H. Timmony sur 135, 3 mi ne Pleasanton, lcn 1500-ft test.

Bee County—Slick-Urschel Oil Co.'s Grissom 1, McEarley sur, 1 mi s Caesar fld, lcn Wilcox test.

Caldwell County—F. W. Wiegand's Owen 1, Carr sub, ab 80, 1 mi ne Tenney Crk fld, sp on 3300-ft test.

Duval County—H. H. Howell's Martinez 1, San Francisco Gr, 1 mi n Howell et al's Escobas 1, lcn 6000-ft test. J. L. Scott's Saenz 1-A, Sur 526, 2 mi ne Kreis fld, lcn 4400-ft test.

Fayette County—M. M. Miller & Son's Holmcamp 1, J. M. Molino sur, 4 mi sw Muldoon, sp 3200-ft test.

Hays County—Lubell Oil Co.'s Howard 1, Travis sur, 2 mi se Driftwood, mi 3500-ft test.

Hidalgo County—W. R. Davis' Jackson-Harrison 1, lot 3, blk 10, Steele-Pershing sub, 2 mi ne McAllen, ru 8500-ft test.

Jim Hogg County—V. F. Neuhaus' McLean 1, blk 5, sur 20, 1½ mi nw Randado, sp 3600-ft test.

Karnes County—H. J. Baker's Yanta 1, Hardway sur, 3½ mi e Helena, orig abnd 2610 ft, prep to dd to 5500 ft in Wilcox.

McMullen County—Glenda Oil Co.'s Reed 1, Sec 74, near central portion county, dr 250 ft on 1550-ft cont.

Starr County—Sun's Montalvo 1-C, Los Retachez gr, n of Sun fld, mi for 5500-ft test. Otto C. Woods' Bass 1, lot 9, blk 1, J. & L. sur, Por 89, 1 mi n Barbacoas fld, lcn 2000-ft test.

Zavala County—Adams, Lyles and Norman's Matthews 1, Sec 4, I&GN sur, blk 2, 4½ mi nw LaPryor, sp & sd, 3500-ft test.

COMPLETIONS

Duval County—Graham Bros.' Yaeger 1, sur 38, nw por county, abnd 1080 ft, top Mirando 1068 ft.

Fayette County—M. M. Miller & Sons' Kerr 1, J. M. Molino sur, 4 mi sw Muldoon, abnd 3323 ft.

Maverick County—Continental's Baker 1, Rives Gr, 25 mi se Eagle Pass, abnd 2400 ft, top San Miguel 2330 ft.

San Patricio County—Henshaw Bros.' John Hancock 1, Sec 13, 2 mi s Sinton, abnd 7215 ft.

Webb County—Harry E. Murray's Adami 1, sec 338, 20 mi nw Freer, abnd 1065 ft.

WEST TEXAS

FIRST REPORTS

Crockett County—Humble's Owens 1, c sw se HE&WT sec 8, blk GG, lcn.

Ector County—Oil Well Drl. Co. 'et al's Johnson-Shell 1, nwc T&P sec 48, blk 44, T-1-S, lcn.

COMPLETION

Reeves County—C. A. Kitsos et al's Burchard 1, ne se PSL sec 7, blk 58, abnd 1000 ft.

NORTH TEXAS

FIRST REPORTS

Clay County—Fisher & Kahn's Taylor 1, W. Richardson sur A-1032, lcn.

Haskell County—Ed C. Lawson et al's C. C. Rose 1, 392-ac tr, J. McCass sur A-95, lcn.

Young County—Kerlyn Oil Co. et al's Garvey 1, nwc south 309-ac of east 333 ac GB&N Ry. A-119, mim.

COMPLETIONS

Archer County—Shell's Coleman 4-A, 990 ft out nwc lot 3, ATNCL sec 74, new deep pay Scotland pool, top Bend 4984 ft, Mississippian 5258 ft, Ellenberger 5751-5850 ft, pb Mississippian perforations 5550-60 ft, used 1000 gals acid, flowed 316 bbls oil 2 hrs.

Throckmorton County — Helmerich-Payne & Phillips Pet.'s Batchler 1, nw nw TE&L sec 2119, top Bend 4053, Ellenberger 4910 ft, abnd 5112 ft.

Wilbarger County—Phillips Pet. Co.'s Waggoner-Bates 10, ne nw ne H&TC sec 43, blk 4, new pay Rock Crossing, top Landreth lime 2602 ft, top Ellenberger 3904 ft, 1000 gals acid 3804-15 ft, flowed 94.9 bbls oil 3 hrs ¾-in.

Young County—Kerlyn Oil Co. et al's Hazelton 1, sw nw TE&L sec 1995, new pool, top Bend 4245 ft, pb from 4615 ft to Strawn sand 3384-94 ft, pumped 30 bbls, initial, half water.

EAST TEXAS

FIRST REPORT

Hunt County—Ed V. & J. D. Parsons et al's Marshall 1, nwc of D. Ausmus sur, ne edge Commerce, rur for Paluxy test.

COMPLETIONS

Fannin County—H. W. English et al's Parkhurst 1, nwc 80-ac tr, M. P. Davis sur, abnd 1100 ft.

Limestone County—J. E. Farrell Drl. Co.-Frank Bryan's Gilliam 1, 1536 ft from nw and 1426 ft from ne lines J. S. Spencer sur, elev 506 ft, top Georgetown 1973 ft, anhydrite 3250-60 ft, Pettit 3623 ft, Travis Peak 3728 ft, 1st gravel 4503 ft, abnd in schist 4867 ft.

Red River County—Magnolia's Henry 1, 700 ft from n and 640 ft from w lines 100-ac tr, MEP&P Ry sur No. 103, top Georgetown 1810 ft, Paluxy 2395 ft, massive anhydrite 3297-3345 ft, top quartzite 4747 ft, abnd 4789 ft.

Shelby County—Ce-Beth Oil Co., Pickering 1, Patterson sur, drilled to 3343 ft, pb & perf 1475-1510 ft in Taylor marl, pumped 50 bbls oil, 39.8 gravity & 50 bbls sw in 24 hours.

FOR SALE: Used drill pipe due to discontinuing use of own drilling tools. Have two strings A-1 in 4" x 30' A.P.I. full-hole drill pipe, and two strings 3" drill pipe. Box 2018, Phone 4548, Tyler, Texas.

Logansport-Joaquin Spacing

The 320-acre space rule for the Louisiana side of the Logansport-Joaquin gas field will be continued for the present at least, the Louisiana Conservation Commission announced last week after a hearing on the matter.

MEN IN THE INDUSTRY'S NEWS

A. L. MOORE, Humble Oil & Refining Company district construction foreman at North Crowley, Louisiana, has been transferred to Louisiana division office as division construction foreman. Other transfers made in the Humble supervisory forces, production department, are: B. R. Gossett, tool pusher, appointed assistant district superintendent in Lovell Lake district; O. L. Furse, district engineer, transferred from Pyote district to London district; Henry M. Krause, Jr., field engineer, appointed district engineer in Pyote district; N. N. Jones, district engineer formerly in the London district, transferred to East Texas division office as senior engineer; Thomas O. Allen, associate engineer in Gulf Coast division office, transferred to Anahuac district as district engineer; C. W. Armstrong, field engineer, transferred to Conroe district as district engineer; J. S. McCune, district engineer formerly at Conroe, transferred to Gulf Coast division office as senior engineer; Ralph A. Watson, district engineer, transferred from Friendswood to Maurbro district; Paul N. Weidner, district engineer, transferred from East Texas division to Houston office as engineer; R. A. Thompson, assistant district chief clerk of Tomball natural gas system, appointed district chief clerk; E. A. Brandt, civil engineer, appointed assistant division civil engineer in Gulf Coast division; C. K. Seaman, district engineer, transferred from Chalkley district to Bayou des Glaise district.

S. A. Barclay, Jr., district engineer, transferred from Houston office to Chalk district; N. F. Henderson, district engineer, transferred from Magnet district to Friendswood district; Harold V. Wait, field engineer, appointed district engineer in Livingston district; A. R. Rommel, field engineer, formerly at Roanoke, appointed safety engineer in Gulf Coast division; Haylett O'Neil, Jr., associate engineer in Houston office, appointed district engineer in Magnet district; D. C. Rhodes, tool pusher, appointed assistant district superintendent in Tomball district; Gus F. Abendroth, field engineer, appointed district engineer in Potash district. S. S. Langford, tool pusher, appointed district superintendent in Bayou Sale, La., district; Wallace J. Frank, office engineer in North Texas division, appointed district engineer in Avoca district; J. E. Clayton, gas plant superintendent, transferred from Flour Bluff gasoline plant to Lovell Lake repressuring plant as superintendent in charge; W. A. Drake, repressuring plant foreman, appointed gas plant superintendent in charge of Flour Bluff gasoline plant.

HENRY LAUDERDALE'S resignation as chief of Attorney General Gerald C. Mann's Oil and Gas Division, Austin, Texas, was announced last week. His successor has not been named.

EDWARD STEWART of Mt. Pleasant, producer and contractor and head of Stewart Oil Company, has been appointed to the Michigan Oil Advisory Board to fill a vacancy created by resignation of C. A. Smith, Jr., president of Smith Petroleum Company, Grand Rapids. Smith served on the board since its creation in 1939. He has moved to Chester, West Virginia.

J. R. LEWIS, principal examiner for the Petroleum Conservation Division, Department of Interior, Houston, has been transferred to Federal Tender Board staff at Kilgore, Texas. J. K. Wilson has been transferred to Houston as board examiner.

WALTER A. PARRISH has been appointed by National Supply Company as executive engineer of Superior Engine Division with headquarters at the Springfield, Ohio, plant. Parish was born in Detroit, graduating from Detroit Technical Institute in 1910. Since that time practically his entire work has been with internal combustion engines. From 1919 till 1922 he was chief engineer for Akron Motor Truck Company. In 1922 he joined Hercules Motors Corporation at Canton as engine designer, and in 1927 went to White Motors at Cleveland in the same capacity. For 10 years he was engine designer, assistant chief engineer and chief engineer for The Buda Engine Company at Harvey, Illinois, followed by one year with Caterpillar Tractor Company as engine designer. In 1939 he joined Cummings Engine Company at Columbus, Indiana, as assistant chief engineer, serving in that capacity until his recent decision to accept this new position with the National Supply Company.

CLEM CURTIS of Oblong has been appointed by Governor Dwight H. Green as superintendent of the new oil and gas division of the Illinois Department of Mines and Minerals. The appointment, awaited by the industry since a conservation law was passed last June, is slated to be followed by creation of a number of enforcement districts supervised by special investigators. Curtis is a resident of Crawford County. He has been engaged in oil producing in the Robinson field for several years.

EARL C. MAUND has been appointed in a sales and engineering capacity at the Chicago office by Manning, Maxwell & Moore, Inc., of Bridgeport, Conn. His engineering services will cover the products of Consolidated safety valves, Hancock valves, American instruments and Ashcroft gauges. He formerly was in an engineering capacity with Sinclair Refining Company at East Chicago, and with Cities Service Oil Company at Shreveport.

WALTER E. HAWKINSON, treasurer of Allis-Chalmers Manufacturing Company since 1936, has been elected secretary-treasurer. He assumes the secretarial duties of Wm. A. Thompson, vice president and secretary, who resigned recently. The new secretary started with Allis-Chalmers 34 years ago in the treasurer's department. In 1926 he became assistant manager of the Tractor Division. Returning to the treasurer's department in 1936, he was elected its head, a position he will now occupy jointly with his office as secretary. Thompson's resignation terminates 40 years of service.

HERBERT MALLINSON, 47, president of Mallinson Oil Corporation, died October 9 of a heart attack at Dallas, where he had resided for 30 years.

JACK W. GREEN has been appointed manager of the Chicago office and surrounding territory of Tube-Turns, Inc., Louisville, Kentucky. Green has been associated with Tube-Turns, Inc. in both the Louisville and Chicago offices. He has also had wide familiarity with the Tube-Turn welding fittings and industrial piping through his connection with American Radiator and Standard Sanitary Corporation as manager of the Akron, Ohio, branch for over 12 years.

J. W. Green

L. C. PRYOR is the engineer in charge of the new field office at Great Bend, Kansas, recently opened by the Conservation Department of Kansas Corporation Commission. Potential and other tests in fields in western part of the state will be arranged at the office.

M. J. McGUIGAN, North Texas district production superintendent for The Texas Company, will also assume charge of company operations in West Central Texas, retaining headquarters at Wichita Falls, when Joe P. Markt, superintendent of the latter district, qualifies for retirement late this year.

H. C. FOUNTAIN, North Texas district geologist for Magnolia Petroleum Company, has been transferred to San Antonio, being succeeded by Fred H. Moore, transferred from Youngstown, Ohio.

H. W. BOGGESS, superintendent of safety for Sinclair Prairie Oil Company, Tulsa, was elected a member of the executive committee of National Safety Congress.

C. E. RICHARDSON, Oklahoma City, is now with Central Pipe Line Company in Illinois.

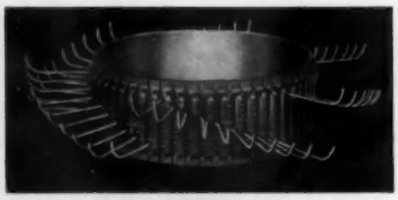
JACK KINLEY of M. M. Kinley Company, Houston, oil well-fire fighting firm, showed motion pictures of various phases of capping and killing wild wells at the meeting of the Houston Geological Society October 16.

HARRY S. MOSS, president of Moss Oil & Gas Company and prominent in Dallas civic activities, has been elected member of the board of directors of the First National Bank in Dallas.

L. H. MELTZER, geologist for Union Producing Company, formerly located at Beeville, Texas, is now at Shreveport, Louisiana.

CLEMENT L. NOLAN, 41, production superintendent for Sun Oil Company, died October 5 of a heart attack at his Alice, Texas, residence. He had been with the company 17 years.

ROY H. SMITH, field engineer for Stanoling Oil & Gas Company, has moved from Odessa to Greggton, Texas.



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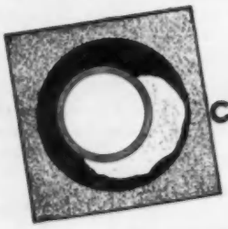

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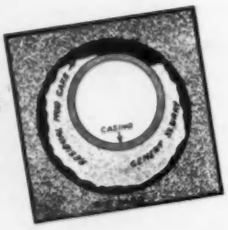

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JOHN A. O'BRIEN recently was elected to the post of vice president of Johns-Manville Sales Corporation, Lewis H. Brown, president of Johns-Manville, announced. O'Brien will continue his duties as general sales manager of the power products and industrial department, a post he has held since 1938. He is a member of the J-M Quarter Century Club, having begun his career with the company in 1915. He also is a member of the Engineers Club, New York.

JOHN R. SUMAN, vice president of Humble Oil & Refining Company and president of American Institute of Mining and Metallurgical Engineers, last week announced six national engineering societies have joined to organize the Engineers' Defense Board. The board will provide a central agency that will be prepared to assist various government branches with engineering knowledge and experience connected with military preparedness.

HAROLD CRAWFORD, sales manager of Parkersburg Rig & Reel Company, Parkersburg, West Virginia, is in the Southwest on an extended business trip.

HUGH H. GLEN, president of Emsco Derrick & Equipment Company, has announced various changes in the executive department effective September 15. William C. Kinder, former manager of the D+B California division, has been appointed assistant to the president. J. H. Knecht, has been appointed manager of sales, and Frank P. Summers, Jr., previously Kinder's assistant, has been advanced to manager of the D+B California division. All three have long been members of the Emsco and D+B organizations.

H. H. Glen

Wm. C. Kinder

J. H. Knecht

F. P. Summers, Jr.

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The table below presents a comparison of weights of 6000 lb. test UNIBOLT Couplings and ring joint flanged unions.

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3"	24 Lb.	61 Lb.
4"	53 Lb.	104 Lb.

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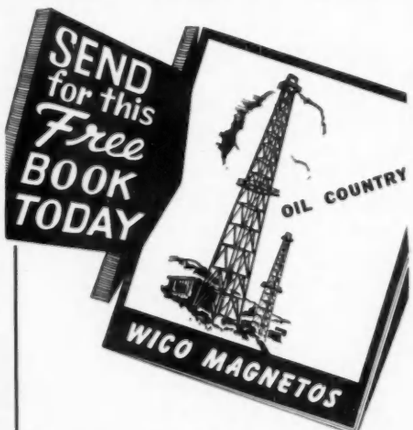

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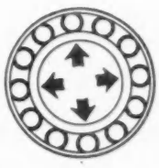
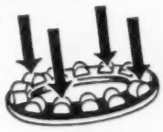
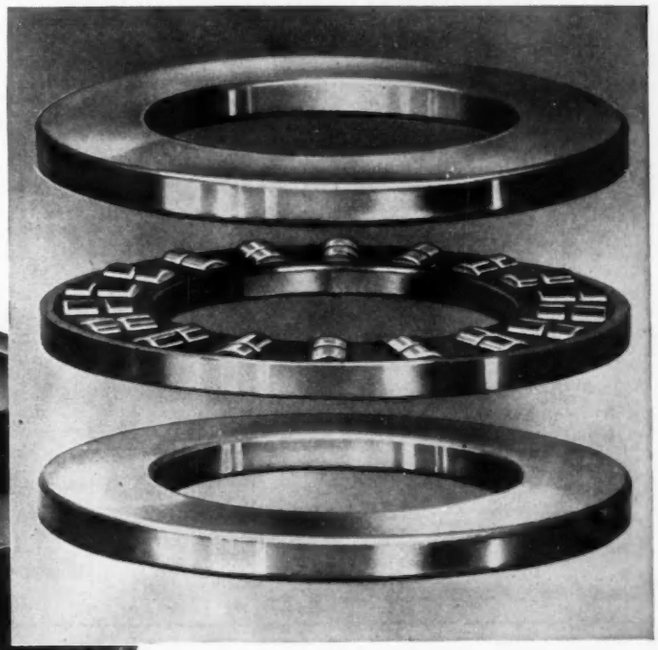


ALL
RADIAL LOADS
Carried at Right Angles to the Roller Surface.



ALL
THRUST LOADS
Carried at Right Angles to the Roller Surface.



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Squeaks from the Bull Wheel

Surprise!

A colored preacher at the close of his sermon, discovered one of his deacons asleep. He said: "We will now have a few minutes of prayer. Deacon Brown will lead."

"Lead!" said Deacon Brown, suddenly awakening, "I just dealt."

Progress

"Don't you think man is great in learning to fly like a bird?"

"Sure, but he's got a long way to go before he can land on a light wire."

Fine Distinctions

What is the difference between caution and cowardice?

Caution is when you're afraid, and cowardice is when the other fellow's afraid.

Nothing Irregular

In the wild and woolly West a poker game was in progress. A tenderfoot, looking on, saw one of the players deal himself four aces from the bottom of the pack. The tenderfoot whispered indignantly to another onlooker, "Did you see that?"

"What?"

"That swindler dealt himself four aces."

"Wall, it was his deal, wasn't it?"

Hasty Diagnosis

The doctor told the movie actress that she was run down and needed a change.

"A change?" said she. "Do you know that during the last 18 months I've had three husbands, four cars, three jewel robberies, 11 cooks, two divorces, and seven landlords? What other change can you suggest?"

Smoker's Throat

A doctor reports that a patient called for a consultation and, pointing to his throat, whispered hoarsely:

"Cigarettes."

"Ah, ha. Smoking too many?"

"No, asking for them."

All-Round Sport

The long hitter drove too soon from the tee, while a bow-legged member was still playing his second. The drive passed between the latter's legs.

"Sir," he bellowed, when they met later, "that's not golf, confound you."

"I know but it's good croquet."

Profitable

"Yes, my daughter's musical education was a profitable venture."

"Really?"

"Yes, I managed to buy the house on either side of my own for about half the real value."

Candid Comment

"Is your husband a book-worm?"

"No, just an ordinary one."

Just a Burnt Out Coil

What's your name and occupation and what are you charged with?

My name is Sparks. I'm an electrician and I'm charged with battery.

Put him in a dry cell.

A Matter of Degree

"Say, wasn't Harry a one-time husband of yours?"

"Not him. He was a two-timer."

The Milky Way

Some extracts from letters to the Milk Officer:

"Please send me another form for cheap milk as I am expecting mother."

"Please send me a form for supply of milk for having children at reduced prices."

"I posted the form by mistake before the child was properly filled in."

"I have a baby eighteen months old, thanking you for same."

"Will you send me a form for cheap milk. I have a baby two months old, and did not know anything about it till a friend told me."

"I had intended coming to the Milk Office today but had fifteen children this morning."

"I have a child nearly two years old and looking forward to an increase in November, hoping this will suit your kind approval."

"I have a baby two years old fed entirely on cows and another four months old. Will I be able to have milk for baby as my husband finishes his night watchman's job on Thursday."

"Sorry I have been so long in filling my form but I have been in bed for two weeks with my baby and did not know it was running out till the milkman told me."

—*Manchester* (England) *Guardian.*

GULFCO

CAREFULNESS IN MANUFACTURE

MAKES FOR PERFECT FIT AND INTERCHANGEABILITY . . thus saving time on the lease

GULFCO Forged Steel Casing Heads

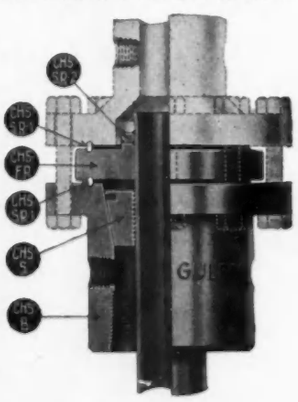
Type CHS

2000 lbs., 4000 lbs., 6000 lbs., 10,000 lbs. Test Pressures

An A.P.I. Flanged Casing Head with combined advantage of slip suspension and double welded seal and suspension. Slip suspension eliminates the setting of space nipples and the double weld construction avoids leaks due to pin holes in the welding. A.P.I. Flanges permit direct connection to flanged blowout preventers or upper heads. Full hole opening.

Gulfco Forged Steel for Safety

WRITE FOR OUR SPECIAL CATALOG WITH PRICES



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GULF COAST MACHINE & SUPPLY COMPANY

22 Years Manufacturing Forged Steel Fittings

BEAUMONT, TEXAS

Houston Sales Office 1312 Commerce St.

New York Export Office 32 Liberty St. Cable Address "Oilind New York"

USE RUBBER TO WIPE YOUR WIRE LINE

A clean wire line helps your crew. They can work better on a clean floor, free from drippings. With a Patterson-Ballagh Wire Line Wiper the line is stripped completely of mud and oil. A spiral rubber within a compact steel housing wipes the line as it comes out of the hole. Spark-proof. Use one on every well.

See Composite Catalog

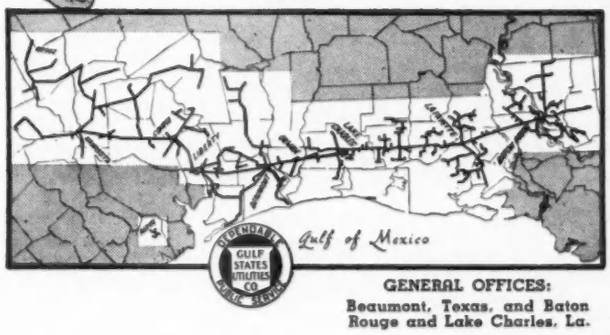
PATTERSON-BALLAGH WIRE LINE WIPER

PATTERSON-BALLAGH CORPORATION

Los Angeles Houston New York City

IN A HURRY...

No Worry



GENERAL OFFICES:
Beaumont, Texas, and Baton Rouge and Lake Charles, La.

Defense Depends on Dependable Tools

These Work-Saver RIDGID Pipe Cutters Cut Your Time on Rush Work

● Arm your men with work-saver RIDGID Pipe Tools and you help them produce more, in less time and with less effort. . . These RIDGID Cutters speed your pipe cutting because their special thin wheels save reaming time — forged and assembled in solid hubs, they roll easily and cleanly through any pipe. Made with heavy-duty malleable frames, they're built to stand overwork, always cut true. Made 3-wheel and 4-wheel (No. 42) for still faster cutting. Four sizes, capacities to 4". . . Get the advantage of this time-and-work saving, *buy RIDGID Cutters at your Supply House.*

RIDGID *thin forged cutter wheel . . . gives you faster cleaner pipe cutting.*

THE RIDGE TOOL COMPANY
ELYRIA • OHIO

RIDGID
***WORK-SAVING* PIPE TOOLS**

NOTES FOR THE Equipment Buyer and User

Sponge Rubber

B. F. GOODRICH COMPANY

To fill requirements of a wide range of applications where oil, grease or other solvents which deteriorate natural rubber rapidly are present, The B. F. Goodrich Company, Akron, Ohio, announces a new sponge rubber made from its synthetic rubber, Ameripol. Exhaustive tests have proved that Ameripol has extraordinary resistance to oils, greases and many other solvents, as well as a higher degree of temperature than natural rubber.

The new Ameripol synthetic sponge rubber is in the same manufacturing classification as milled sponge made from natural rubber. Sodium bicarbonate or a similar blowing agent is turned into gas by the heat of vulcanization and thus produces a cellular structure.

Pipe Cleaner

CORONA SHEET METAL WORKS

A rotary pipe cleaner, consisting of an inflatable elastic core and a cover of interlinked chains, and which is propelled through the pipe by fluid flow, is announced by Corona Sheet Metal Works, 114 East 7th Street, Corona, California.

For oil pipe-line cleaning, the ball center of the cleaner is made of Neoprene or other non-soluble synthetic rubber, the ball being introduced within the pipe at a branch or scraper trap, then inflated or filled with water and pressure applied behind it. The rotation of the chain-clad ball removes deposits on the pipe walls, and is said to clear

Corona Pipe Cleaner

a line of rust and scale as well as paraffin and other petroleum deposits.

When used in gas lines and propelled by admitting gas behind the ball, speed of travel through the pipe is said to reach 60 miles per hour or more, with effective cleaning of hydrates and incrustations.

Waterproofing

Primoid Products Corporation, 103 Park Avenue, New York, has announced a new waterproofing compound, Primoid Standard, said to be an effective seal for concrete, stone, wood and composition materials. The compound is a clear rubber-base liquid which can be either sprayed or brushed on. Primoid Standard can also be used as a coating for iron, steel and other metals and is said to be a corrosion preventive.

Ear Defenders

MINE SAFETY APPLIANCES COMPANY

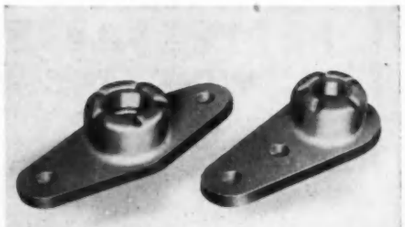
Mine Safety Appliances Company, Braddock, Thomas & Meade Streets, Pittsburgh, has announced the M.S.A. Ear Defenders for reducing the detrimental effects of noise upon workers.

Fatigue, irritability and nervous exhaustion are said to be lessened by use of Defenders which reduce loud noises by 35-45 decibels or to about 1/10, yet are so designed that warning signals and conversation can be heard.

Stop Nuts

ELASTIC STOP NUT CORPORATION

Elastic Stop Nut Corporation, 2332 Vauxhall Road, Union, New Jersey, has announced its anchor type nuts for blind-mounting applications on general industrial equipment following successful use in aircraft construction.



Elastic Stop Nuts

Designed to provide vibration-proof fastenings for removable plates used to

The materials problem was the chief topic of discussion recently at a 2-day sales meeting of Atlas Supply Company at Muskogee, Oklahoma. District managers, store managers and managers of the branches at Tulsa, Dallas and Wichita attended. Territory represented covered an area from Grayville, Illinois to Artesia, New Mexico. The company, a subsidiary of Wheeling Steel Corporation, schooled its store managers in assisting in interpreting and executing governmental forms in securing materials and supplies.

Front row—J. O. Williford, F. E. Maxwell, B. E. Gold, Al Powers, Wheeling Steel Corporation; R. E. Howe, sales manager; H. U. Everett, secretary; J. R. Brooks, vice-president; C. W. Clymans, treasurer; Ed Robertson, R. M. Carter, A. J. Hammett, C. E. Miles.

Second Row—J. H. White, R. L. Gibbins, DeLoss Parr, W. P. Knowles, L. S. Hensy, H. F. Oliver, J. T. Jones, R. B. Yanaway, J. G. Russell, R. P. Watson, E. C. Bynum, G. R. Donnelly.

Back Row—J. H. Muir, W. E. Ossenkop, J. H. Rives, S. C. Maples, W. C. Steinle, Z. T. Rose, W. T. Lewis, H. R. Chrysler, W. E. Stitzer, B. E. Davis, Hugh Hale.

Attending the meeting also, from Wheeling Steel Corporation, were E. Tyler Davis, assistant to vice-president in charge of sales, and H. E. Schafer, assistant manager, tubular sales division.

cover hand holes, access and inspection openings, anchor nuts are permanently riveted to the inside of the structure.

Nuts are offered in a wide range of size, material, and thread system, every nut incorporating Elastic Stop self-locking feature, a fibre locking collar which is an integral part of each nut. Bolts may be removed and replaced many times, the anchor nuts retaining their locking ability because of the resilient character of the fibre collar.

Well Head Equipment Makers Adopts Nomenclature of Parts

The Association of Well Head Equipment Manufacturers achieved one of its five objectives at a monthly meeting in Fort Worth October 14 when it adopted specific names for pieces of well head equipment.

The nomenclature committee's report, embracing definite terms, was approved by the association, L. D. Hilton, executive secretary, announced.

1. Well-Head Equipment—Completed assembly of production equipment at top of well bore.

2. Casing Head — Unit attached to surface casing serving to suspend and seal next smaller size casing. It may take any form consistent with this function. If more than two strings of casing are used, additional casing heads are required.

3. Tubing Head—Unit attached to uppermost casing or casing head serving to suspend or seal tubing. Tubing is distinguished from casing by fact it can be manipulated under operating conditions, whereas casing supposedly and usually is fixed or permanently installed.

4. Christmas Tree—Completed assembly of various sizes of valves and fittings including tubing head for production control purposes.

5. Blowout Preventers—Unit used at top of well bore and attached either directly to casing or to such uppermost section of well head equipment to provide operator with control of pressures between pipe string during drilling or production operations in which is involved movement of innermost pipe string.

Nomenclature for various parts of casing head or tubing head were designated as body, hanger, sealing medium, bonnet, and connecting means (either flanges or threaded connections). Hanger is defined as a suspension medium for casing and tubing within the casing head or tubing head, embracing slips, mandrels, rams and other types.

The association's five objectives are: 1. certified pressure testing, 2. standardization, 3. priorities, 4. service, liabilities, wages and hours, 5. supply store relations. Progress reports were made and accepted on each of the four remaining objectives.

Present at the meeting were E. L. Lorehn, M. T. Works, Frank Crow, G. S. Watson, A. Henderson, B. V. Fisher, E. L. Barker, J. J. Hastik, C. L. Cron, John H. Moran, C. J. Harris, L. D. Hilton, all of Houston; L. L. Rector, L. L. McCollum, R. V. Evridge, Charles Zartman, all of Fort Worth; Roy Hammond, Wichita Falls.

V-Belt

B. F. Goodrich Company, Akron, Ohio, has announced, as result of development and research, it has been able to increase heat-resisting qualities of its standard V-belts so that they are now fully equal to the special black heat-resisting belts.

For this reason the special black heat-resisting construction has been discontinued, and standard belts can be ordered from stock for drives on which the heat-resisting belts have previously been necessary.

Standard construction V-belts have in the past been recommended by Goodrich only for operations in temperatures under 130° F. Specially componded heat-resisting V-belts were furnished for temperatures above 130 degrees.

Vinson Supply Company Opens Store at Odessa

Vinson Supply Company has opened a new store at 912 North Grant Street, Odessa, Texas, primarily to warehouse Fisher control equipment as required for production work in West Texas and New Mexico areas.

Louis Barnett, a Vinson sales representative in the West Texas and New Mexico territory, is in charge of the new store. Robert Searls is warehouseman.

Power Slush Pump

Oil Well Supply Company, Dallas, Texas, has issued a descriptive bulletin of the Oilwell No. 14P-HD Power Slush Pump. This new 7¼" x 14" pump is said to have ample capacity for heavy-duty drilling but at the time is not too large for convenient portability.

LETTERS

October 10, 1941

DEAR SIR:

The particular problem we as a small manufacturer are faced with is perhaps commonly known to you, i.e., receiving from the supply companies the necessary endorsement of priority under Preference Rating P-22.

We are aware that unless the oil companies and their subsidiary interests place this rating on their orders for emergency stock when given to the supply company branch stores, the supply company cannot re-order under the blanket rating to replenish their stock from us as manufacturers.

This situation is serious with us, as it well may be with others in a like position.

We are wondering if you, through your widely read publication, cannot bring this to the attention of these purchasing departments of the oil companies.

A few of our supply store accounts have provided us with this preference, but the balance feel that as long as we are making shipments to them without the rating, it is not of much importance.

Any aid you can develop along this line will be deeply appreciated.

E. R. JOHNSON,
Vice President.

Economy Eletric Lantern Company, Milwaukee, Wisconsin.

THE OIL WEEKLY has called attention to oil men the need for their cooperation with the equipment manufacturers and suppliers if proper priority ratings are to be obtained as well as the procedure necessary today to secure needed equipment. See article on page 51, THE OIL WEEKLY, October 6, for details pertaining to situation mentioned in letter above.

Patented

BOWEN SAFETY JOINT

for

DRILLING and FISHING

Two-piece sturdy construction. Standard internal and external dimensions. Packers of proven efficiency. Constant distribution of torque load between both sections.

Will not release or back-off except at the will of the operator.

These features have earned Bowen Safety Joints an enviable popularity in the field.

LITERATURE GIVING COMPLETE DETAILS UPON REQUEST

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P. O. BOX 1025 HOUSTON, TEXAS
Phones: Odessa, Tex., 660—Midland, Tex., 1419
Through Supply Stores Anywhere in U. S. A.

CAVINS RECOVERED THIS JUNK THE SUCTION BAILER WAY

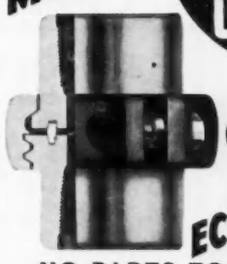
A 3⅛" OD Cavins Automatic Hydraulic Suction Bailer with a 4" OD Cavins Junk Basket and By-pass valve was run in 5½" OD casing to 7600 feet to recover the junk pictured above, including a testing tool slip, rock bit cutters and a broken up bridging plug. And we can do the same, or similar jobs, for you!

CAVINS

Houston, Kilgore, Odessa, Corpus Christi, Lake Charles, Houma

CAVINS BAILER SERVICE

SAVE TIME AND MONEY with Red-Rex QUICK-JOINT PIPE UNIONS



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NO PARTS TO GET LOST AND CAUSE DELAY

OIL CITY BRASS WORKS
FOUNDERS · MANUFACTURERS · MACHINISTS
Beaumont, Texas, U. S. A.

Again... GRIZZLY HELPS DRILL 'EM DEEP

Reg U S Pat Off

Honolulu Oil Corporation Well No. 25-P, Buena Vista Hills, California

■ Grizzly Pressure Seal Rotary Hose again demonstrated its ability to withstand the hard service and high pressures encountered in record breaking deep wells by successfully contributing to the completion of Honolulu's P-25—World's deepest electrically drilled well—14,622 feet total depth.

Grizzly's superior performance is your protection against hose troubles, leaks, repairs, replacements and excessive hose costs. Ask your supply dealer or write direct for Bulletin No. 20-OF.

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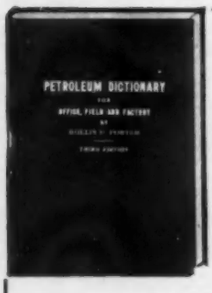
PRESSURE-SEAL ROTARY HOSE



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This book grew out of demands for some source of definitions for terms used by the petroleum industry. Previous editions have gone into the hands of executives, engineers, students of Petroleum Engineering, manufacturers, brokers and advertising agencies. It should be in the library of every one in any way connected with, or interested in the petroleum industry.

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